

**Michigan Department of  
Transportation**



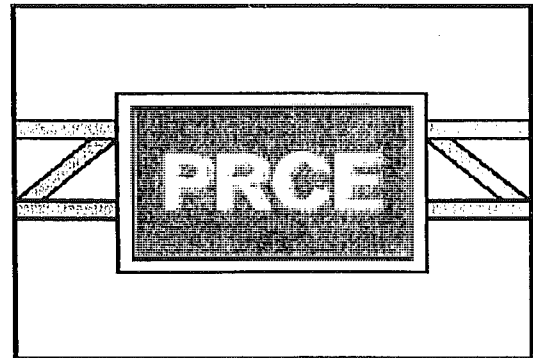
**DETECTING AND QUANTIFYING  
SEGREGATION IN  
BITUMINOUS PAVEMENTS AND  
RELATING ITS EFFECT TO CONDITION**

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DIVISION**

**Appendix E**

**Field and Laboratory Data (Sites 1-14)**

**Michigan State University  
Pavement Research Center of Excellence  
Department of Civil and Environmental  
Engineering  
East Lansing, Michigan 48824-1226**



**TESTING AND RESEARCH SECTION  
CONSTRUCTION AND TECHNOLOGY DIVISION  
RESEARCH PROJECT NO. RC-1421  
APPENDIX E**

March 2000

**Michigan Department of  
Transportation**

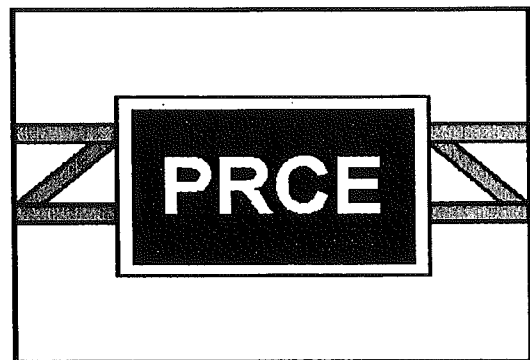


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East Lansing, Michigan 48824-1226**



March 2000

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**PAVEMENT RESEARCH  
CENTER OF EXCELLENCE**

Michigan State University  
Department of Civil and Environmental  
Engineering  
East Lansing, Michigan 48824-1226  
(517) 355-5147  
Fax (517) 432-1827  
baladi@egr.msu.edu



**Final Report**

<b>Report Number</b> MDOT - PRCE - MSU - 2000 - 210		<b>Contract Number</b> 94-1699	
<b>Title and Subtitle</b> Detecting and Quantifying Segregation in Bituminous Pavements and Relating Its Effect to Condition		<b>Final Report Date</b> March 2000	
<b>Authors</b> Thomas F. Wolff, Ph.D., P.E. Gilbert Y. Baladi, Ph.D., P.E. Chieh-Min Chang, M.S.		<b>TAG Chairperson</b> Michael Frankhouse	
<b>Sponsoring Agency Name and Address</b> Michigan Department of Transportation Construction and Technology Division		<b>TAG members</b> Dave Bradley    Gary Mayes Jeff Click        David Smiley Craig Kelso      Tom Ziegler	
<p><b>Abstract</b></p> <p>This report describes a follow-up project to the previous project titled "Test Method to Determine the Existence of Segregation in Bituminous Mixtures". To better correlate nuclear-measured density with segregation, procedures were developed to incorporate mapping of apparently segregated areas and apparently non-segregated control areas. Statistical comparison tests were then performed on data from both segregated and non-segregated areas to assess whether there were significant differences in nuclear-measured density and gradation parameters.</p> <p>It was found that statistically significant differences in nuclear density will usually be present where medium or heavy segregated areas are identified visually and these areas have aggregate gradation differences from non-segregated areas. The proposed criteria were the nuclear density differences with p-values less than <math>10^{-3}</math>. The criteria were further verified by the gradation differences of p-values less than <math>10^{-2}</math>. The conditional probability of finding medium or heavy segregation based on visual identification and nuclear density measurements is approximately 86%; the conditional probability of finding light through medium segregation drops to 63%.</p> <p>The occurrence of segregation deteriorates pavements. Raveling and cracking were the most common distresses at segregation sites. Growth rate of distresses depends on the degree of segregation.</p>			
<p><b>Key Words</b> : segregation, nuclear density, asphalt pavements, statistical methods, quality control, bituminous mixtures, pavement performance</p>			

### Conversion Factors

English	Metric
1 inch, in	25.44 mm = 2.544 cm = 0.0254 m
1 foot, ft	304.8 mm = 30.48 cm = 0.3048 m
1 yard, yd	914.4 mm = 91.44 cm = 0.9144 m
1 mile (U.S.)	1,609 m = 1.609 km
1 mil	0.0254 mm = 0.0000254 m = 25.4 micron
1 inch square, in <sup>2</sup>	645.2 mm <sup>2</sup> = 6.45 cm <sup>2</sup> = 6.452 m <sup>2</sup>
1 foot square, ft <sup>2</sup>	0.0929 m <sup>2</sup> = 929.03 cm <sup>2</sup>
1 yard square, yd <sup>2</sup>	0.836 m <sup>2</sup> = 8361.3 cm <sup>2</sup>
1 square mile (U.S.)	2.590 km <sup>2</sup>
1 pound mass, lbm or lb	0.4536 kg
1 ton = 2000 lbm	907.2 kg
1 slug (1 lb-force/ft/s <sup>2</sup> )	14.59 kg
1 pound-force, lbf	4.448 N
1 ton-force	8.896 x 10 <sup>3</sup> N = 8.896 kN
1 pound per square inch, psi	6.895 kPa = 6.895 x 10 <sup>3</sup> Pa
1 kip per square inch, ksi	6896 kPa = 6.895 x 10 <sup>6</sup> Pa
1 pound-force/square foot, psf	47.88 Pa
1 pound-mass per cubic foot, pcf	16.018 kg/m <sup>3</sup>
For asphalt overlays	
100 pounds per square yard $\cong$ 0.9 in	54.25 kg/m <sup>2</sup> $\cong$ 23.1 mm
170 pounds per square yard $\cong$ 1.5 in	92.22 kg/m <sup>2</sup> $\cong$ 39.2 mm

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**Site 1**

# Segregation Survey

Date of Survey: Dec. 3, 1997

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: J 38000 Route: MAOT Special Cruis garage Direction: Parking lot West  
 Region: Univ. Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 1 ADT: \_\_\_\_\_

## Definition of Segregation:

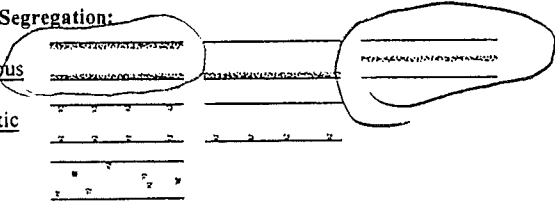
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

*Med*

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

Low  Moderate  High

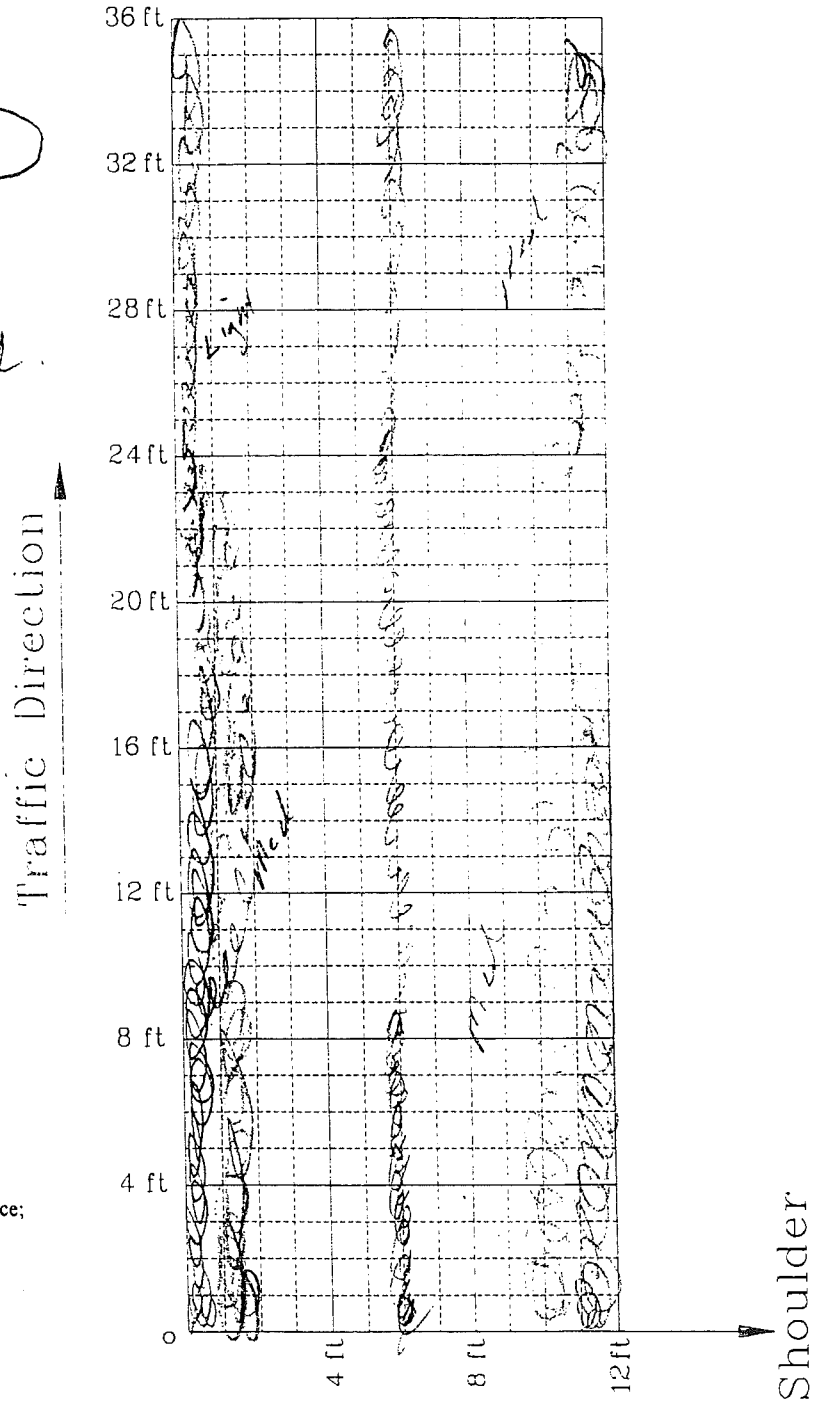
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 38000 Route: Spauld road Direction: West  
 Region: Unat Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 1 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**

Low  Moderate  High

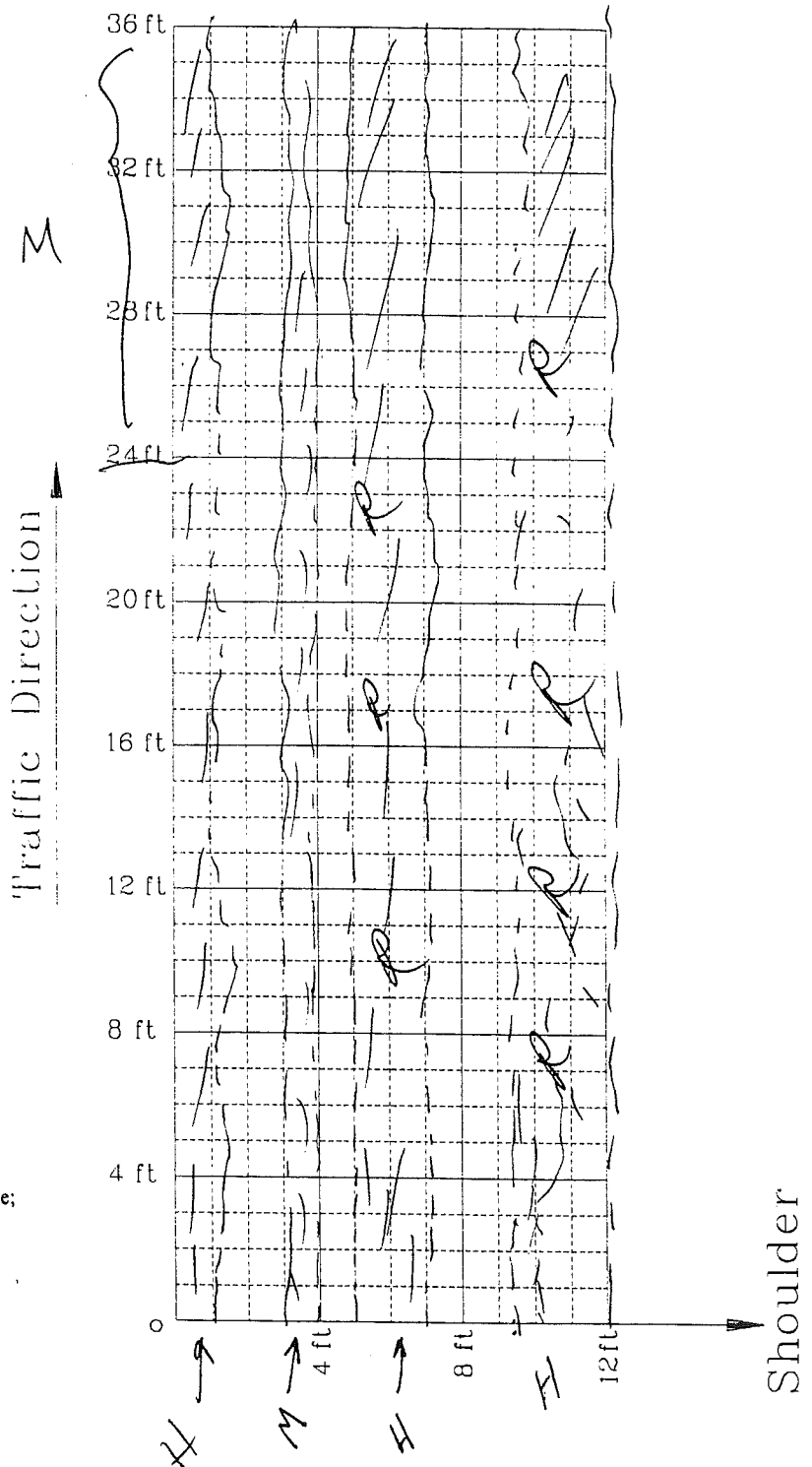
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 38000 Route: Special Direction: W  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to 35  
 Section Number: 1 Test Site Number: 1 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in. or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

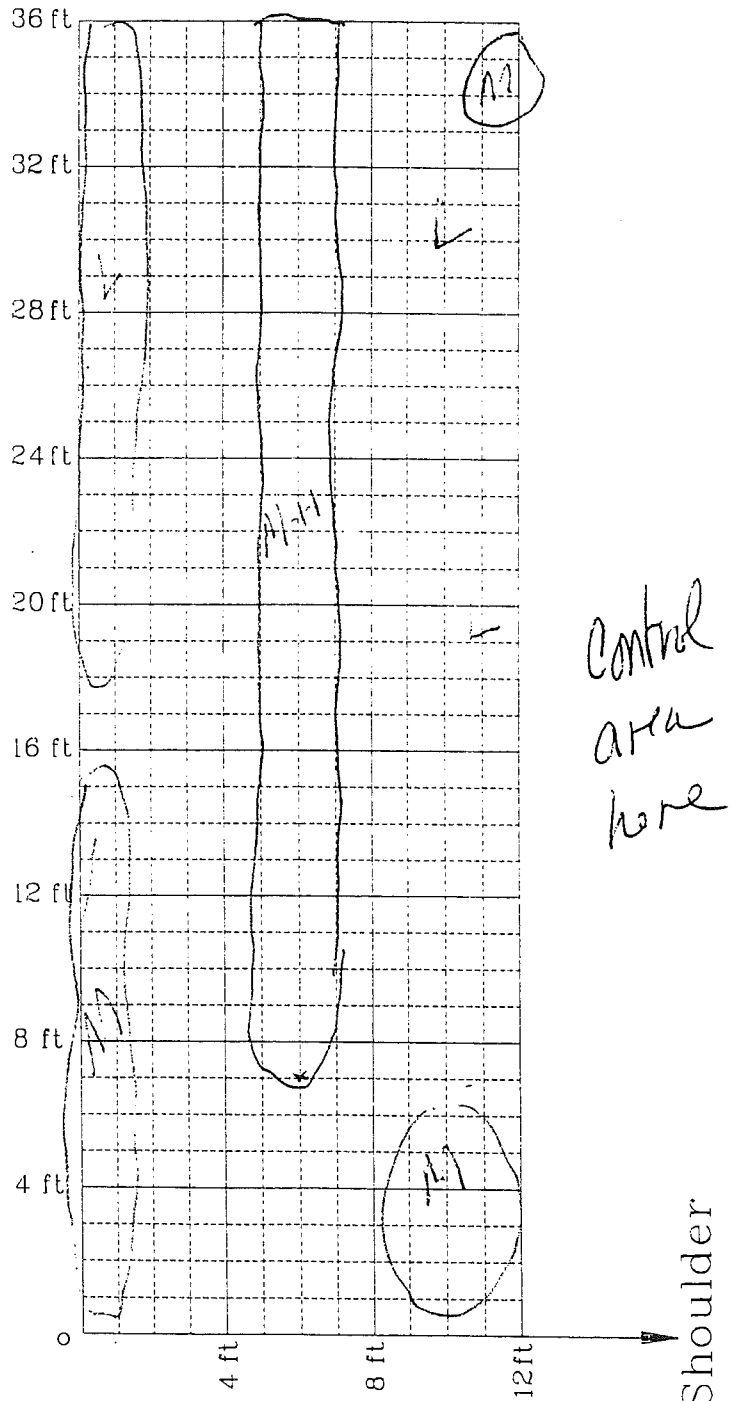
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

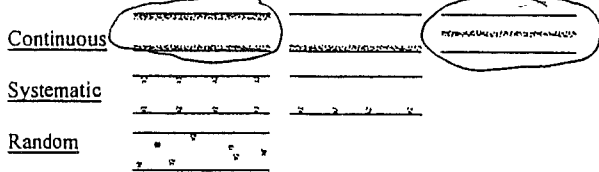
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 138000 Route: Sp. Crews Lot Direction: West  
 Region: University Mile Post: from N/A to N/A  
 Section Number: 1 Test Site Number: 1 ADT: N/A

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

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**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth N.A.

#### 4. Flushing

Low  Moderate  High

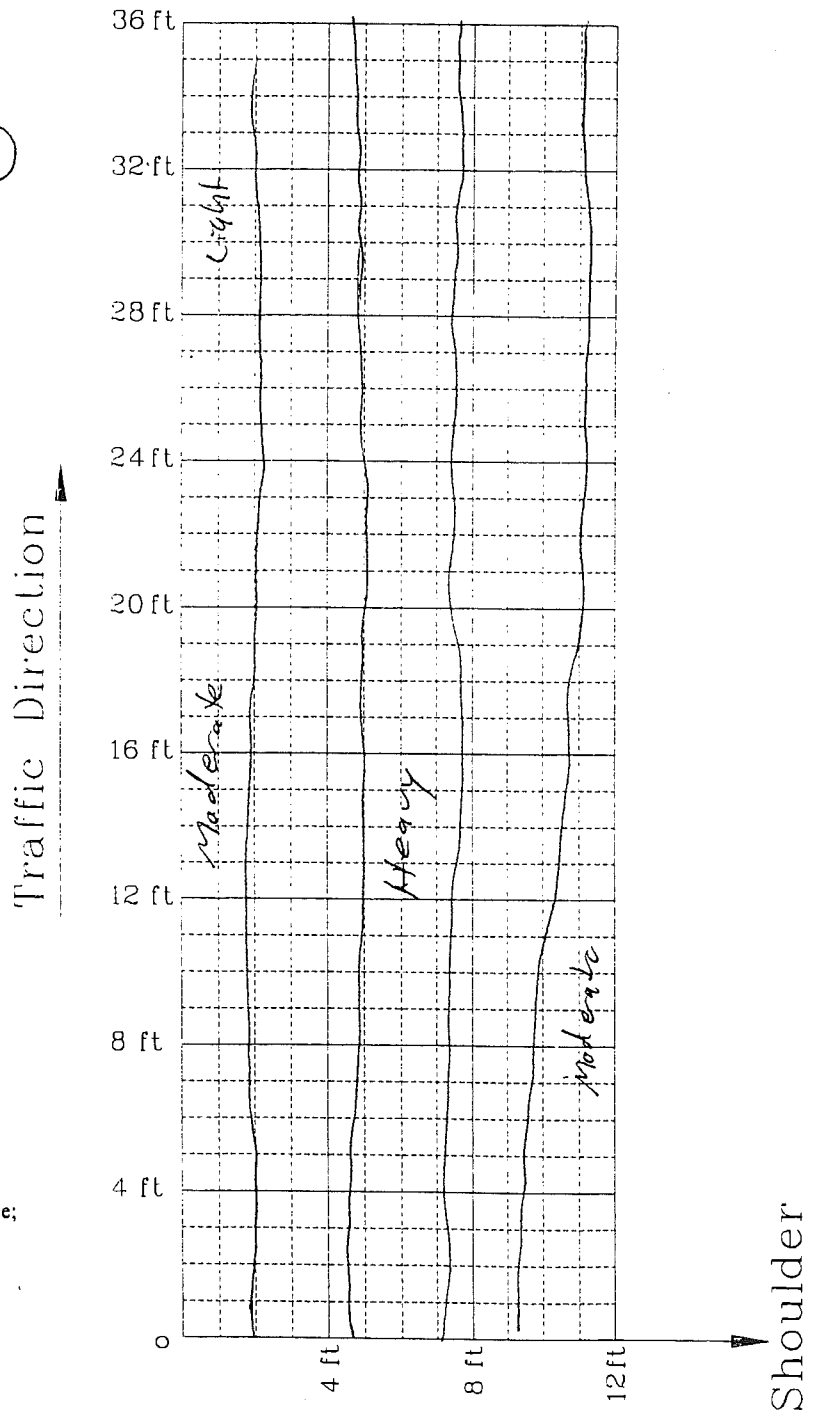
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**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

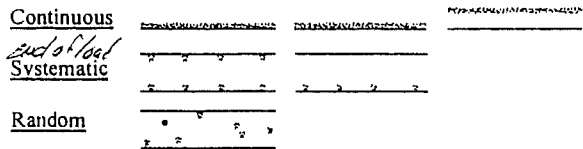
Weather:

Surveyor: \_\_\_\_\_ (your name) *mod / special lot / crew*  
 Control Section Number: 38000 Route: \_\_\_\_\_ Direction: West  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 1 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

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**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

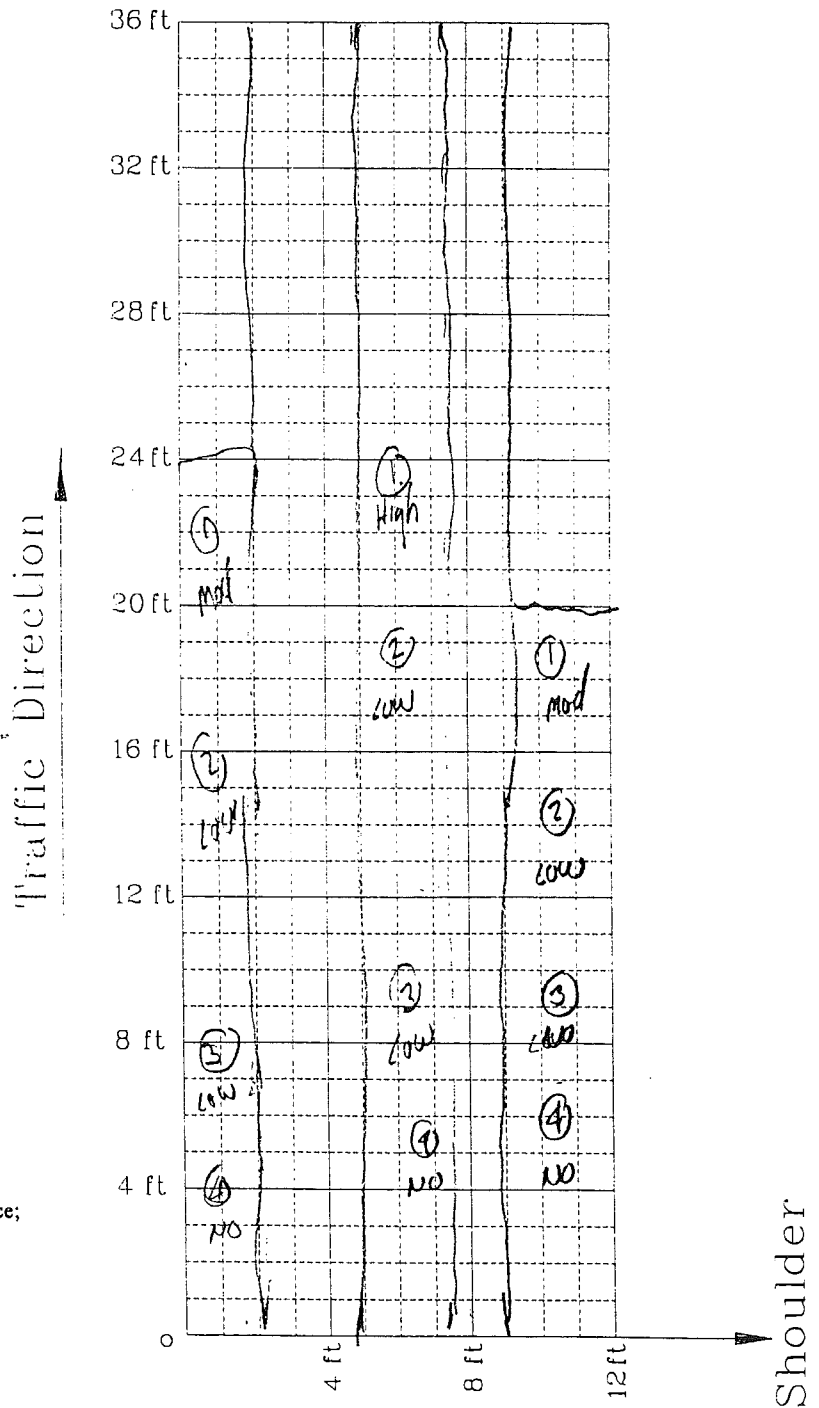
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### COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: 1 (your name)  
 Control Section Number: 38000 Route: Spec. Gravel <sup>Lot</sup> Direction: West  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 2 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

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### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

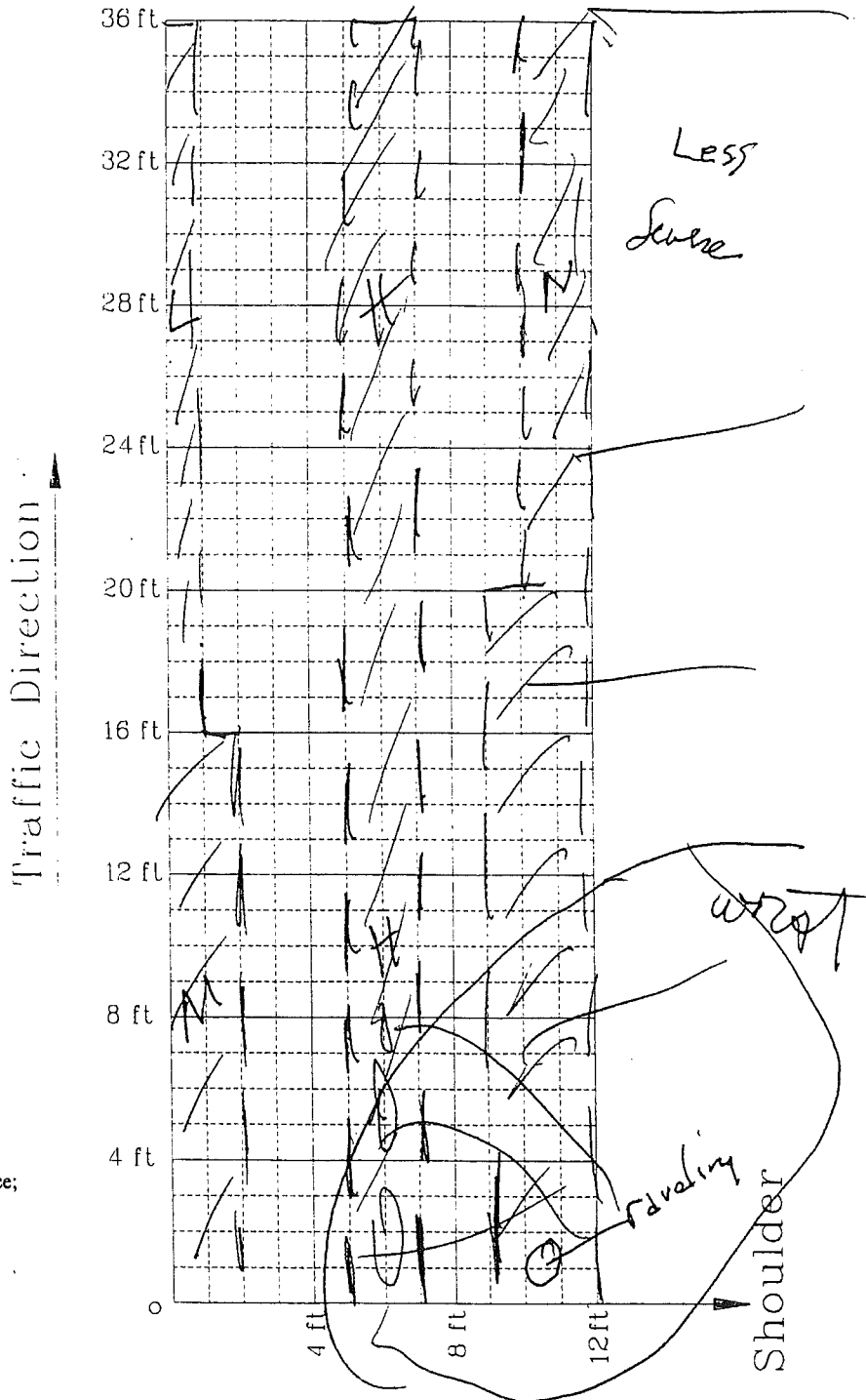
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997  
Weather: cloudy mid 30's

Surveyor: \_\_\_\_\_ (your name)  
Control Section Number: Bridge Forestry Route: 38000 Direction: \_\_\_\_\_  
Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
Section Number: # 1 Test Site Number: # 1 ADT: N/A

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

- Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

### Degree of Segregation

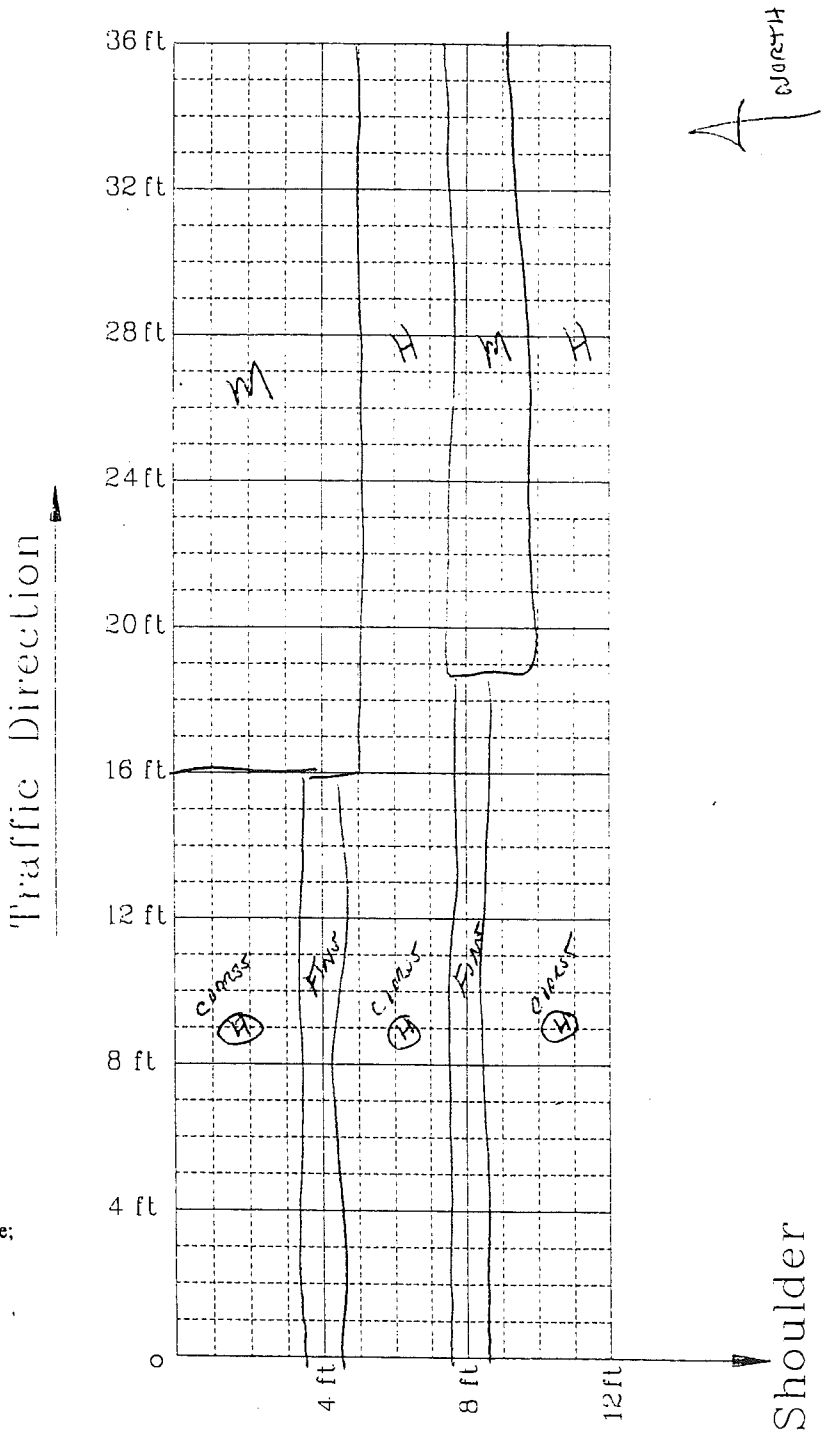
- Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

1. Raveling *SOME AREAS*  
 Low  Moderate  High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate
2. Cracking  
 Low  Moderate  High  
Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking
3. Rut Depth  
4. Flushing  
 Low  Moderate  High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 3, 1997

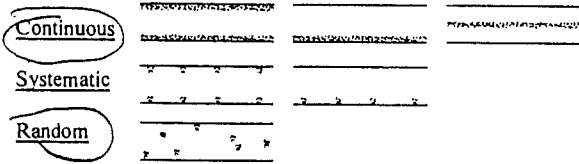
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 38000 Route: SPEC Grews Direction: West Bd.  
 Region: Univ. Mile Post: from 0 to 0  
 Section Number: 1 Test Site Number: 1 ADT: 10

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

None

**4. Flushing**

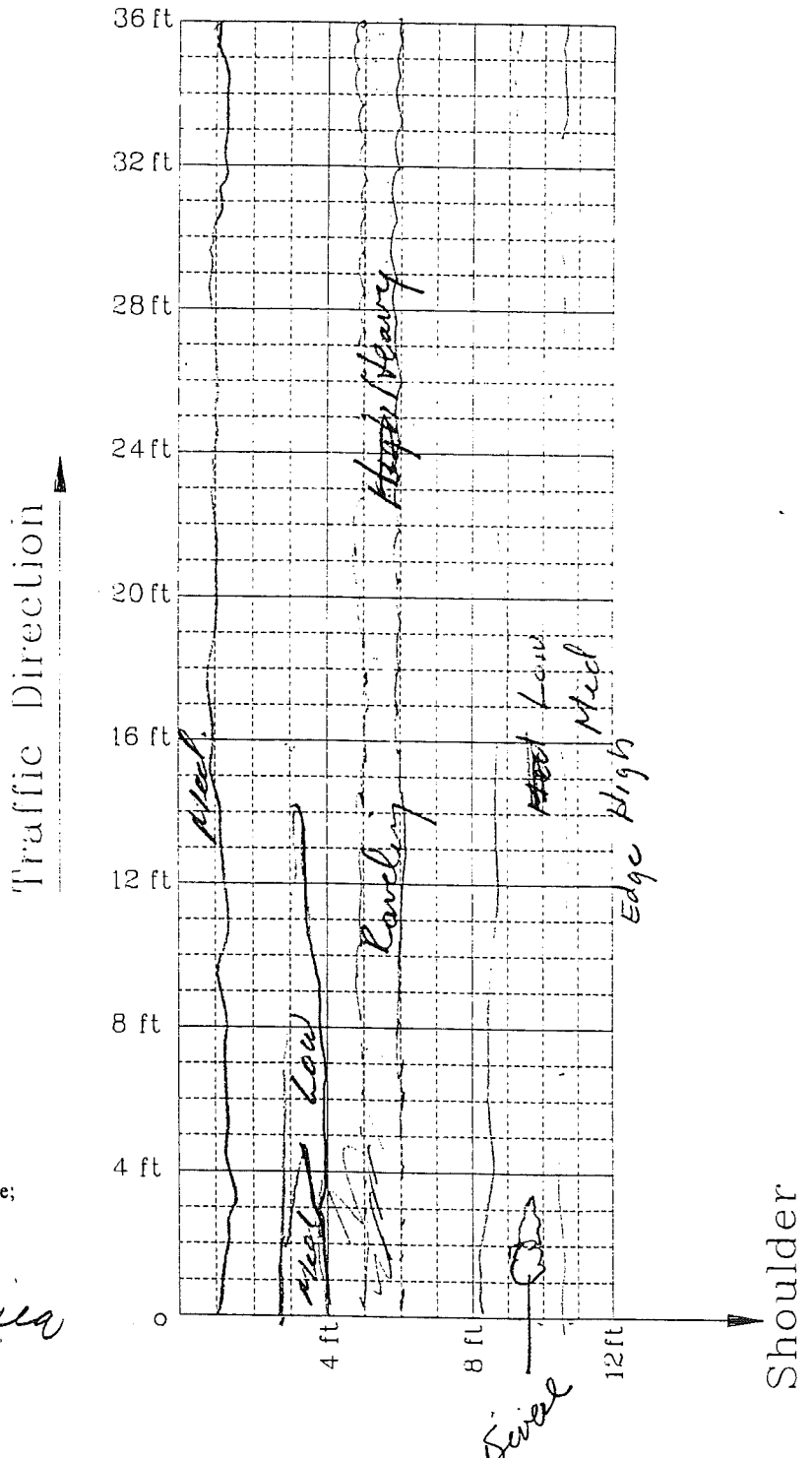
Low  Moderate  High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

Loss of mat east of test area

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

35° E.

9:50 A.M.

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: cloudy

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: \_\_\_\_\_

Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: 5401 Test Site Number: \_\_\_\_\_ ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous

Systematic

Random

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

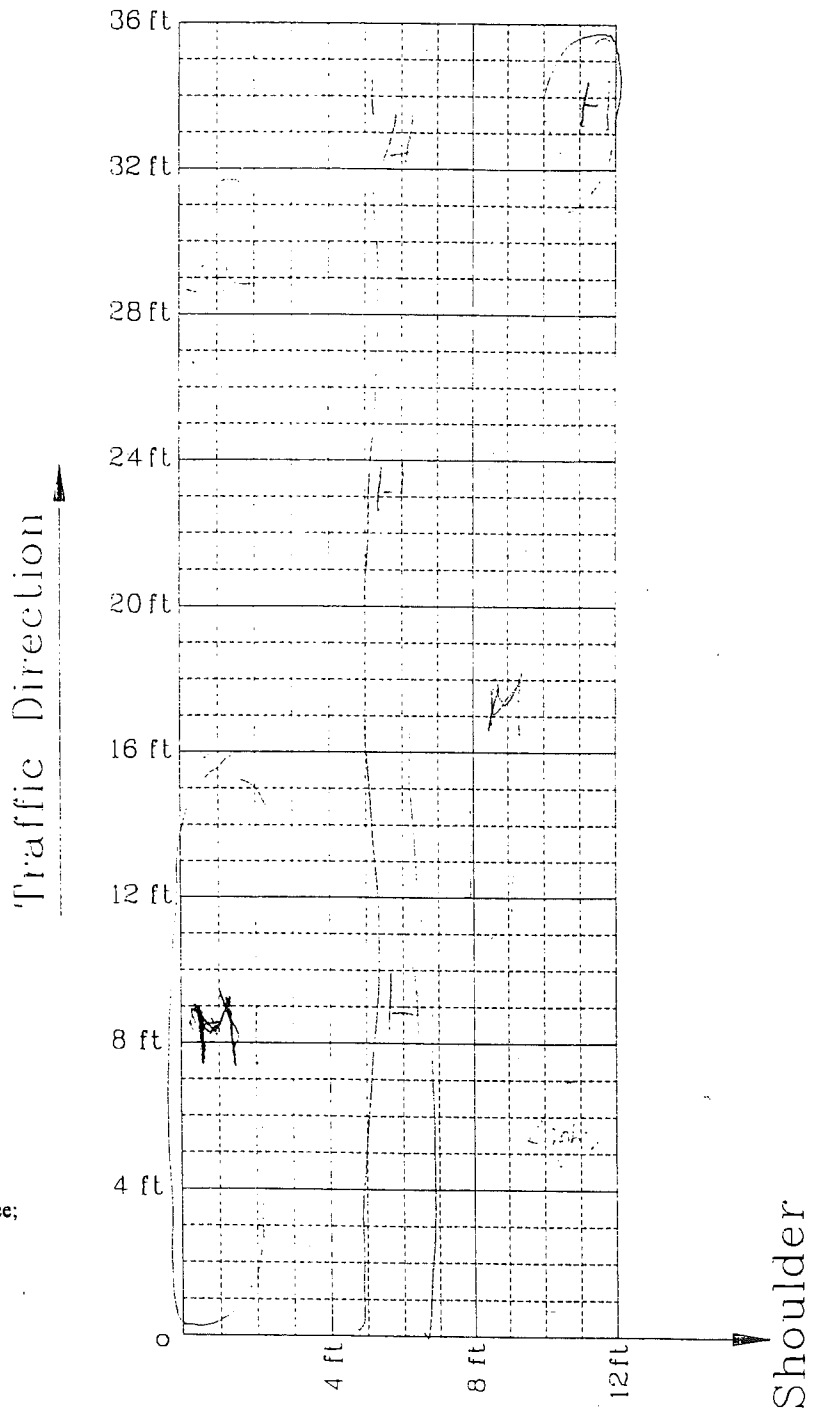
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Nuclear Density Sampling Data (Jan. 16, 1998)

**SITE 1**

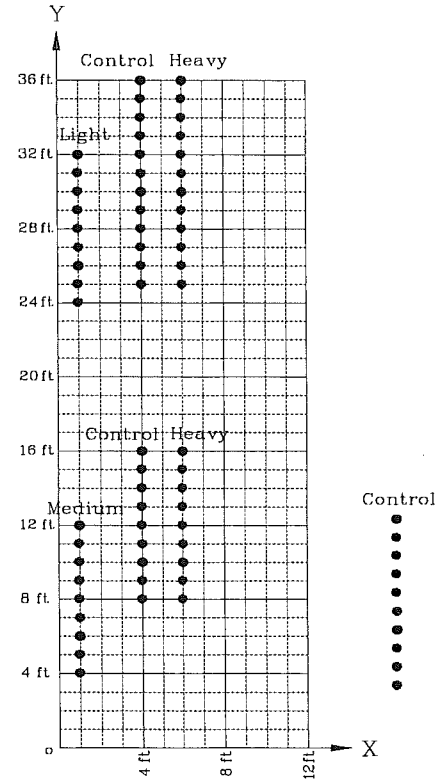
**Parking Lot of MDOT Special Crews Building, Jackson**

Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2850
	Moisture	670

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 3	
Light		Control		Heavy	
0132	135.9	0436	140.2	0636	132.7
0131	136.0	0435	143.3	0635	134.5
0130	136.2	0434	140.4	0634	133.3
0129	137.5	0433	140.6	0633	134.1
0128	136.3	0432	140.7	0632	133.2
0127	135.0	0431	141.6	0631	131.4
0126	135.4	0430	139.6	0630	134.5
0125	135.5	0429	138.1	0629	132.1
0124	135.9	0428	138.1	0628	131.9
mean	136.0	0427	138.9	0627	132.5
std.	0.76	0426	139.6	0626	135.1
		0425	139.4	0625	134.6
		mean	140.0	mean	133.3
		std.	1.46	std.	1.22

Sample 4		Sample 5		Sample 6	
Medium		Control		Heavy	
0112	133.1	0416	138.4	0616	132.7
0111	133.5	0415	137.7	0615	132.5
0110	133.0	0414	140.9	0614	132.9
0109	129.8	0413	138.7	0613	131.9
0108	131.8	0412	138.0	0612	131.9
0107	130.9	0411	139.6	0611	130.9
0106	131.7	0410	138.9	0610	131.7
0105	133.0	0409	136.7	0609	131.9
0104	133.0	0408	139.9	0608	129.8
mean	132.2	mean	138.8	mean	131.8
std.	1.24	std.	1.26	std.	0.96



Control	
Outside	
Control 10	136.9
Control 9	136.4
Control 8	136.6
Control 7	138.6
Control 6	138.9
Control 5	138.7
Control 4	140.0
Control 3	138.1
Control 2	137.8
Control 1	139.3
mean	138.1
std.	1.20

# Nuclear Density Sampling Data (April 9, 1998)

**SITE 1**

**Parking Lot of MDOT Special Crews Building, Jackson**

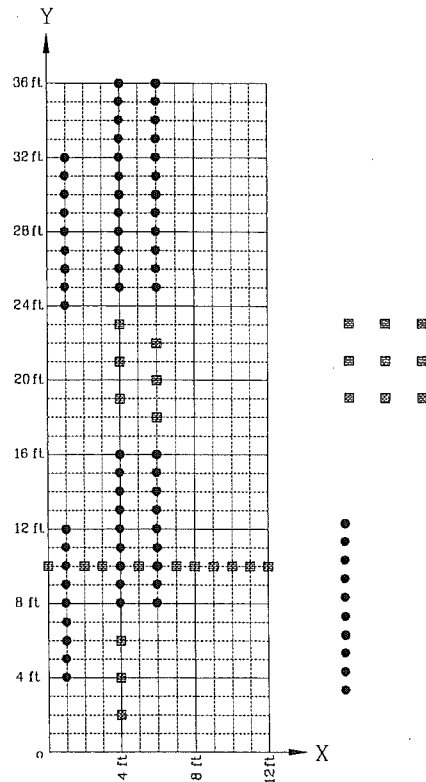
Chart Standard	Density	2863
	Moisture	652
Operating Standard	Density	2870
	Moisture	658

Gauge No.	1E+05
Model	Troxler 3440
Inspector	Joe

Control		Heavy	
0423	138.4	0622	124.4
0421	138.8	0620	129.4
0419	134.7	0618	129.4

Control	
0406	138.9
0404	138.0
0402	138.1

Transverse		Control	
0010	133.3	New C9	135.5
0210	134.1	New C8	132.6
0310	135.1	New C7	135.1
0510	135.1	New C6	136.9
0710	136.2	New C5	135.1
0810	138.6	New C4	135.2
0910	135.2	New C3	138.2
1010	138.3	New C2	138.2
1110	133.4	New C1	134.1
1210	136.8	mean	135.7
		std.	1.84









## Sieve Analysis

Weight of empty bags	17.5
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Weight of bags & soil	1516.7
Weight of soil	1499.2

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 1 Control 2	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	42.9	2.86	2.86	97.14	
	3/8 inch	9.50	2.754	149.3	9.96	12.83	87.17	
	No. 4	4.75	2.016	331.5	22.12	34.95	65.05	
	No. 8	2.37	1.474	190.6	12.72	47.66	52.34	
	No. 16	1.18	1.077	139.1	9.28	56.95	43.05	
	No. 30	0.60	0.795	145.6	9.72	66.66	33.34	
	No. 50	0.30	0.582	219.3	14.63	81.30	18.70	
	No. 100	0.15	0.426	162.1	10.82	92.11	7.89	
	No. 200	0.08	0.312	57.8	3.86	95.97	4.03	
		Pan			60.4	4.03	100.00	0.00
				Total	1498.6	100.00		
			weight					

Operator	Joel Davenport	Weight of tear & soil	2398.8
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1498.7



## Sieve Analysis

Weight of bags & soil	1446.8
Weight of soil	1429.6

Weight of empty bags	17.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 Control 6	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	23.2	1.62	1.62	98.38	
	3/8 inch	9.50	2.754	111.8	7.82	9.45	90.55	
	No. 4	4.75	2.016	321.6	22.51	31.95	68.05	
	No. 8	2.37	1.474	195.8	13.70	45.65	54.35	
	No. 16	1.18	1.077	156.0	10.92	56.57	43.43	
	No. 30	0.60	0.795	134.9	9.44	66.01	33.99	
	No. 50	0.30	0.582	204.5	14.31	80.32	19.68	
	No. 100	0.15	0.426	162.6	11.38	91.70	8.30	
	No. 200	0.08	0.312	58.2	4.07	95.77	4.23	
				Total weight	1429.00	100.00	100.00	0.00

Operator	Joel Davenport	Weight of tear & soil	2329.2
Date	5/12/98	Weight of tear	900.1
Remarks		Weight of soil	1429.1

# Sieve Analysis

Weight of bags & soil	1363.3
Weight of soil	1345.9
Weight of empty bags	17.4

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
Control 8	1/2 inch	12.50	3.116	36.7	2.73	2.73	97.27
	3/8 inch	9.50	2.754	118.2	8.79	11.52	88.48
	No. 4	4.75	2.016	298.1	22.17	33.69	66.31
	No. 8	2.37	1.474	184.1	13.69	47.38	52.62
	No. 16	1.18	1.077	123.7	9.20	56.58	43.42
	No. 30	0.60	0.795	129.6	9.64	66.22	33.78
	No. 50	0.30	0.582	197.4	14.68	80.90	19.10
	No. 100	0.15	0.426	148.8	11.07	91.97	8.03
	No. 200	0.08	0.312	52.6	3.91	95.88	4.12
		Pan			55.4	4.12	100.00
			Total	1344.6	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2244.7
Date	5/14/98	Weight of tear	900.0
Remarks		Weight of soil	1344.7

## Sieve Analysis

Weight of bags & soil	907.3
Weight of soil	890.2

Weight of empty bags	17.1
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
105	1/2 inch	12.50	3.116	79.8	8.96	8.96	91.04
	3/8 inch	9.50	2.754	184.3	20.70	29.67	70.33
	No. 4	4.75	2.016	266.5	29.94	59.60	40.40
	No. 8	2.37	1.474	81.5	9.16	68.76	31.24
	No. 16	1.18	1.077	41.9	4.71	73.47	26.53
	No. 30	0.60	0.795	39.2	4.40	77.87	22.13
	No. 50	0.30	0.582	69.8	7.84	85.71	14.29
	No. 100	0.15	0.426	69.1	7.76	93.47	6.53
	No. 200	0.08	0.312	27.5	3.09	96.56	3.44
	Pan			30.6	3.44	100.00	0.00
			Total weight	890.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	1790.1
Date	5/20/98	Weight of tear	899.9
Remarks		Weight of soil	890.2

## Sieve Analysis

Weight of empty bags	17.1
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Weight of bags & soil	912.6
Weight of soil	895.5

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 1 106	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	60.9	6.80	6.80	93.20	
	3/8 inch	9.50	2.754	176.6	19.72	26.52	73.48	
	No. 4	4.75	2.016	285.8	31.92	58.44	41.56	
	No. 8	2.37	1.474	87.9	9.82	68.26	31.74	
	No. 16	1.18	1.077	45.7	5.10	73.36	26.64	
	No. 30	0.60	0.795	40.2	4.49	77.85	22.15	
	No. 50	0.30	0.582	72.6	8.11	85.96	14.04	
	No. 100	0.15	0.426	71.6	8.00	93.96	6.04	
	No. 200	0.08	0.312	26.8	2.99	96.95	3.05	
		Pan			27.3	3.05	100.00	0.00
			Total weight	895.4	100.00			

Operator	Joel Davenport	Weight of tear & soil	1795.5
Date	5/26/98	Weight of tear	900.0
Remarks		Weight of soil	895.5

## Sieve Analysis

Weight of bags & soil	977.4
Weight of soil	960.2

Weight of empty bags	17.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 107	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	56.7	5.91	5.91	94.09	
	3/8 inch	9.50	2.754	179.0	18.64	24.55	75.45	
	No. 4	4.75	2.016	297.8	31.01	55.56	44.44	
	No. 8	2.37	1.474	92.4	9.62	65.18	34.82	
	No. 16	1.18	1.077	55.6	5.79	70.97	29.03	
	No. 30	0.60	0.795	51.7	5.38	76.36	23.64	
	No. 50	0.30	0.582	86.7	9.03	85.39	14.61	
	No. 100	0.15	0.426	79.3	8.26	93.65	6.35	
	No. 200	0.08	0.312	29.8	3.10	96.75	3.25	
		Pan			31.2	3.25	100.00	0.00
			Total weight	960.2	100.00			

Operator	Joel Davenport	Weight of tear & soil	1860.2
Date	5/26/98	Weight of tear	900.0
Remarks		Weight of soil	960.2

# Sieve Analysis

Weight of empty bags 17.3

Weight of bags & soil 992.6  
Weight of soil 975.3

Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 108	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	71.6	7.34	7.34	92.66	
	3/8 inch	9.50	2.754	223.6	22.93	30.27	69.73	
	No. 4	4.75	2.016	271.6	27.85	58.12	41.88	
	No. 8	2.37	1.474	92.3	9.46	67.59	32.41	
	No. 16	1.18	1.077	49.0	5.02	72.61	27.39	
	No. 30	0.60	0.795	43.8	4.49	77.10	22.90	
	No. 50	0.30	0.582	81.8	8.39	85.49	14.51	
	No. 100	0.15	0.426	76.8	7.88	93.37	6.63	
	No. 200	0.08	0.312	30.7	3.15	96.51	3.49	
		Pan			34.0	3.49	100.00	0.00
				Total weight	975.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	1875.2
Date	5/18/98	Weight of tear	900.0
Remarks		Weight of soil	975.2

## Sieve Analysis

Weight of empty bags      17.1

Weight of bags & soil      953.7  
 Weight of soil              936.6

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 1 109	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	78.3	8.36	8.36	91.64	
	3/8 inch	9.50	2.754	198.4	21.19	29.55	70.45	
	No. 4	4.75	2.016	286.5	30.59	60.14	39.86	
	No. 8	2.37	1.474	79.7	8.51	68.65	31.35	
	No. 16	1.18	1.077	48.8	5.21	73.86	26.14	
	No. 30	0.60	0.795	42.5	4.54	78.40	21.60	
	No. 50	0.30	0.582	73.5	7.85	86.25	13.75	
	No. 100	0.15	0.426	70.6	7.54	93.79	6.21	
	No. 200	0.08	0.312	27.8	2.97	96.75	3.25	
		Pan			30.4	3.25	100.00	0.00
			Total weight	936.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	1836.4
Date	5/26/98	Weight of tear	899.9
Remarks		Weight of soil	936.5

## Sieve Analysis

Weight of bags & soil	1010.9
Weight of soil	993.7

Weight of empty bags	17.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 1 110	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	90.0	9.06	9.06	90.94
	3/8 inch	9.50	2.754	209.3	21.06	30.12	69.88
	No. 4	4.75	2.016	263.5	26.52	56.64	43.36
	No. 8	2.37	1.474	90.4	9.10	65.73	34.27
	No. 16	1.18	1.077	55.5	5.59	71.32	28.68
	No. 30	0.60	0.795	52.2	5.25	76.57	23.43
	No. 50	0.30	0.582	88.3	8.89	85.46	14.54
	No. 100	0.15	0.426	80.1	8.06	93.52	6.48
	No. 200	0.08	0.312	31.0	3.12	96.64	3.36
		Pan			33.4	3.36	100.00
			Total weight	993.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	1893.7
Date	5/26/98	Weight of tear	900.0
Remarks		Weight of soil	993.7



# Sieve Analysis

Weight of bags & soil	1315.5
Weight of soil	1298.4
	17.1

Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
125	1/2 inch	12.50	3.116	54.6	4.21	4.21	95.79
	3/8 inch	9.50	2.754	169.1	13.02	17.23	82.77
	No. 4	4.75	2.016	373.5	28.77	46.00	54.00
	No. 8	2.37	1.474	144.9	11.16	57.16	42.84
	No. 16	1.18	1.077	93.8	7.22	64.38	35.62
	No. 30	0.60	0.795	93.3	7.19	71.57	28.43
	No. 50	0.30	0.582	151.4	11.66	83.23	16.77
	No. 100	0.15	0.426	125.7	9.68	92.91	7.09
	No. 200	0.08	0.312	45.0	3.47	96.38	3.62
	Pan			47.0	3.62	100.00	0.00
			Total weight	1298.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2198.1
Date	5/26/98	Weight of tear	899.9
Remarks		Weight of soil	1298.2

## Sieve Analysis

Weight of bags & soil	1417.6
Weight of soil	1400

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing	
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 1 126	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	106.2	7.59	7.59	92.41	
	3/8 inch	9.50	2.754	168.7	12.05	19.64	80.36	
	No. 4	4.75	2.016	345.1	24.65	44.29	55.71	
	No. 8	2.37	1.474	156.5	11.18	55.46	44.54	
	No. 16	1.18	1.077	106.7	7.62	63.09	36.91	
	No. 30	0.60	0.795	104.9	7.49	70.58	29.42	
	No. 50	0.30	0.582	169.0	12.07	82.65	17.35	
	No. 100	0.15	0.426	137.6	9.83	92.48	7.52	
	No. 200	0.08	0.312	50.2	3.59	96.06	3.94	
		Pan			55.1	3.94	100.00	0.00
				Total	1400.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2299.9
Date	5/18/98	Weight of tear	900.0
Remarks		Weight of soil	1399.9

# Sieve Analysis

Weight of bags & soil	1329.2
Weight of soil	1311.8

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 127	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	115.0	8.77	8.77	91.23
	3/8 inch	9.50	2.754	154.3	11.76	20.53	79.47
	No. 4	4.75	2.016	357.8	27.28	47.80	52.20
	No. 8	2.37	1.474	141.5	10.79	58.59	41.41
	No. 16	1.18	1.077	90.7	6.91	65.51	34.49
	No. 30	0.60	0.795	90.2	6.88	72.38	27.62
	No. 50	0.30	0.582	148.9	11.35	83.73	16.27
	No. 100	0.15	0.426	122.2	9.32	93.05	6.95
	No. 200	0.08	0.312	45.3	3.45	96.50	3.50
		Pan			45.9	3.50	100.00
			Total weight	1311.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2211.8
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1311.7

# Sieve Analysis

Weight of empty bags 17.6

Weight of bags & soil	1384
Weight of soil	1366.4

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 130	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	97.0	7.10	7.10	92.90
	3/8 inch	9.50	2.754	147.3	10.78	17.89	82.11
	No. 4	4.75	2.016	342.1	25.05	42.93	57.07
	No. 8	2.37	1.474	153.1	11.21	54.14	45.86
	No. 16	1.18	1.077	105.7	7.74	61.88	38.12
	No. 30	0.60	0.795	106.5	7.80	69.68	30.32
	No. 50	0.30	0.582	176.8	12.94	82.62	17.38
	No. 100	0.15	0.426	136.6	10.00	92.62	7.38
	No. 200	0.08	0.312	49.3	3.61	96.23	3.77
		Pan		51.5	3.77	100.00	0.00
				Total weight	1365.9	100.00	

Operator	Joel Davenport	Weight of tear & soil	2266.2
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1366.1

# Sieve Analysis

Weight of bags & soil	1354.7
Weight of soil	1337.6

Weight of empty bags	17.1
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
131	1/2 inch	12.50	3.116	50.7	3.79	3.79	96.21	
	3/8 inch	9.50	2.754	168.8	12.62	16.41	83.59	
	No. 4	4.75	2.016	309.5	23.14	39.55	60.45	
	No. 8	2.37	1.474	158.0	11.81	51.36	48.64	
	No. 16	1.18	1.077	113.6	8.49	59.86	40.14	
	No. 30	0.60	0.795	115.0	8.60	68.46	31.54	
	No. 50	0.30	0.582	179.3	13.41	81.86	18.14	
	No. 100	0.15	0.426	143.3	10.71	92.58	7.42	
	No. 200	0.08	0.312	48.9	3.66	96.23	3.77	
	Pan			50.4	3.77	100.00	0.00	
			Total weight	1337.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	2237.4
Date	5/28/98	Weight of tear	900.0
Remarks		Weight of soil	1337.4

## Sieve Analysis

Weight of empty bags 17.1

Weight of bags & soil 1359.4  
Weight of soil 1342.3

Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing	
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 1 132	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	62.9	4.69	4.69	95.31	
	3/8 inch	9.50	2.754	175.4	13.07	17.76	82.24	
	No. 4	4.75	2.016	333.0	24.82	42.57	57.43	
	No. 8	2.37	1.474	155.3	11.57	54.15	45.85	
	No. 16	1.18	1.077	103.5	7.71	61.86	38.14	
	No. 30	0.60	0.795	103.7	7.73	69.59	30.41	
	No. 50	0.30	0.582	169.0	12.59	82.18	17.82	
	No. 100	0.15	0.426	138.9	10.35	92.53	7.47	
	No. 200	0.08	0.312	49.2	3.67	96.20	3.80	
		Pan		51.0	3.80	100.00	0.00	
				Total weight	1341.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2241.7
Date	5/18/98	Weight of tear	899.9
Remarks		Weight of soil	1341.8

# Sieve Analysis

Weight of bags & soil	1325
Weight of soil	1307.8

Weight of empty bags	17.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 410	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	28.6	2.19	2.19	97.81
	3/8 inch	9.50	2.754	101.4	7.75	9.94	90.06
	No. 4	4.75	2.016	307.7	23.53	33.47	66.53
	No. 8	2.37	1.474	176.5	13.50	46.96	53.04
	No. 16	1.18	1.077	125.0	9.56	56.52	43.48
	No. 30	0.60	0.795	122.0	9.33	65.85	34.15
	No. 50	0.30	0.582	193.5	14.80	80.65	19.35
	No. 100	0.15	0.426	151.0	11.55	92.19	7.81
	No. 200	0.08	0.312	51.2	3.91	96.11	3.89
		Pan			50.9	3.89	100.00
			Total weight	1307.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2207.8
Date	5/28/98	Weight of tear	900.0
Remarks		Weight of soil	1307.8

## Sieve Analysis

Weight of bags & soil	1295.6
Weight of soil	1277.9

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 411	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	21.9	1.72	1.72	98.28	
	3/8 inch	9.50	2.754	118.8	9.30	11.02	88.98	
	No. 4	4.75	2.016	289.8	22.70	33.71	66.29	
	No. 8	2.37	1.474	177.1	13.87	47.58	52.42	
	No. 16	1.18	1.077	118.3	9.26	56.85	43.15	
	No. 30	0.60	0.795	118.2	9.26	66.11	33.89	
	No. 50	0.30	0.582	189.8	14.86	80.97	19.03	
	No. 100	0.15	0.426	143.2	11.21	92.18	7.82	
	No. 200	0.08	0.312	50.6	3.96	96.15	3.85	
		Pan			49.2	3.85	100.00	0.00
				Total weight	1276.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2177.1
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1277.0



# Sieve Analysis

Weight of bags & soil	1465.4
Weight of soil	1446.8

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 412	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	32.8	2.27	2.27	97.73	
	3/8 inch	9.50	2.754	95.7	6.62	8.88	91.12	
	No. 4	4.75	2.016	343.7	23.76	32.64	67.36	
	No. 8	2.37	1.474	202.2	13.98	46.62	53.38	
	No. 16	1.18	1.077	138.7	9.59	56.20	43.80	
	No. 30	0.60	0.795	140.9	9.74	65.94	34.06	
	No. 50	0.30	0.582	223.1	15.42	81.36	18.64	
	No. 100	0.15	0.426	160.1	11.07	92.43	7.57	
	No. 200	0.08	0.312	56.9	3.93	96.36	3.64	
		Pan			52.6	3.64	100.00	0.00
			Total weight	1446.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2346.9
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1446.8

# Sieve Analysis

Weight of bags & soil	1412.8
Weight of soil	1395.2

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 1 414	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	29.0	2.08	2.08	97.92
	3/8 inch	9.50	2.754	112.7	8.08	10.16	89.84
	No. 4	4.75	2.016	300.4	21.54	31.70	68.30
	No. 8	2.37	1.474	186.1	13.34	45.04	54.96
	No. 16	1.18	1.077	136.7	9.80	54.84	45.16
	No. 30	0.60	0.795	136.6	9.79	64.63	35.37
	No. 50	0.30	0.582	212.3	15.22	79.85	20.15
	No. 100	0.15	0.426	166.6	11.94	91.80	8.20
	No. 200	0.08	0.312	55.1	3.95	95.75	4.25
		Pan			59.3	4.25	100.00
			Total weight	1394.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2294.8
Date	5/18/98	Weight of tear	900.0
Remarks		Weight of soil	1394.8

# Sieve Analysis

Weight of bags & soil	1373
Weight of soil	1355.9

Weight of empty bags	17.1
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 415	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	35.8	2.64	2.64	97.36
	3/8 inch	9.50	2.754	119.2	8.79	11.43	88.57
	No. 4	4.75	2.016	309.7	22.84	34.27	65.73
	No. 8	2.37	1.474	171.0	12.61	46.88	53.12
	No. 16	1.18	1.077	126.5	9.33	56.21	43.79
	No. 30	0.60	0.795	128.0	9.44	65.65	34.35
	No. 50	0.30	0.582	195.4	14.41	80.06	19.94
	No. 100	0.15	0.426	157.0	11.58	91.64	8.36
	No. 200	0.08	0.312	54.3	4.00	95.64	4.36
		Pan			59.1	4.36	100.00
			Total weight	1356.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2255.6
Date	5/20/98	Weight of tear	899.8
Remarks		Weight of soil	1355.8

## Sieve Analysis

Weight of bags & soil	1378
Weight of soil	1360.9

Weight of empty bags	17.1
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 416	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	26.7	1.96	1.96	98.04	
	3/8 inch	9.50	2.754	118.5	8.71	10.67	89.33	
	No. 4	4.75	2.016	279.5	20.54	31.21	68.79	
	No. 8	2.37	1.474	185.0	13.59	44.80	55.20	
	No. 16	1.18	1.077	133.9	9.84	54.64	45.36	
	No. 30	0.60	0.795	136.8	10.05	64.69	35.31	
	No. 50	0.30	0.582	207.0	15.21	79.90	20.10	
	No. 100	0.15	0.426	162.1	11.91	91.81	8.19	
	No. 200	0.08	0.312	54.7	4.02	95.83	4.17	
		Pan			56.7	4.17	100.00	0.00
			Total weight	1360.9	100.00			

Operator	Joel Davenport	Weight of tear & soil	2260.8
Date	5/28/98	Weight of tear	899.9
Remarks		Weight of soil	1360.9

## Sieve Analysis

Weight of bags & soil 1561.5  
 Weight of soil 1543.7

Weight of empty bags 17.8

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 432	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	33.5	2.17	2.17	97.83
	3/8 inch	9.50	2.754	144.0	9.33	11.51	88.49
	No. 4	4.75	2.016	337.2	21.86	33.36	66.64
	No. 8	2.37	1.474	199.6	12.94	46.30	53.70
	No. 16	1.18	1.077	147.4	9.55	55.85	44.15
	No. 30	0.60	0.795	149.1	9.66	65.52	34.48
	No. 50	0.30	0.582	232.4	15.06	80.58	19.42
	No. 100	0.15	0.426	175.6	11.38	91.96	8.04
	No. 200	0.08	0.312	61.3	3.97	95.94	4.06
		Pan			62.7	4.06	100.00
			Total weight	1542.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2442.8
Date	5/14/98	Weight of tear	900.1
Remarks		Weight of soil	1542.7

# Sieve Analysis

Weight of empty bags      17.1

Weight of bags & soil      1509.7  
 Weight of soil              1492.6

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 433	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	50.8	3.40	3.40	96.60
	3/8 inch	9.50	2.754	148.3	9.94	13.34	86.66
	No. 4	4.75	2.016	330.2	22.12	35.46	64.54
	No. 8	2.37	1.474	180.7	12.11	47.57	52.43
	No. 16	1.18	1.077	137.8	9.23	56.80	43.20
	No. 30	0.60	0.795	139.0	9.31	66.11	33.89
	No. 50	0.30	0.582	214.2	14.35	80.46	19.54
	No. 100	0.15	0.426	169.6	11.36	91.83	8.17
	No. 200	0.08	0.312	58.4	3.91	95.74	4.26
		Pan			63.6	4.26	100.00
			Total weight	1492.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2392.5
Date	5/20/98	Weight of tear	899.9
Remarks		Weight of soil	1492.6

## Sieve Analysis

Weight of bags & soil 1499.1  
Weight of soil 1482

Weight of empty bags 17.1

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 434	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	24.5	1.65	1.65	98.35
	3/8 inch	9.50	2.754	139.4	9.41	11.06	88.94
	No. 4	4.75	2.016	346.5	23.38	34.44	65.56
	No. 8	2.37	1.474	191.6	12.93	47.37	52.63
	No. 16	1.18	1.077	142.4	9.61	56.98	43.02
	No. 30	0.60	0.795	133.3	9.00	65.98	34.02
	No. 50	0.30	0.582	214.7	14.49	80.47	19.53
	No. 100	0.15	0.426	167.9	11.33	91.80	8.20
	No. 200	0.08	0.312	58.8	3.97	95.77	4.23
		Pan			62.7	4.23	100.00
			Total weight	1481.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2381.8
Date	5/18/98	Weight of tear	900.0
Remarks		Weight of soil	1481.8

# Sieve Analysis

Weight of empty bags 17.1

Weight of bags & soil 1015.9  
Weight of soil 998.8

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 611	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	82.7	8.28	8.28	91.72
	3/8 inch	9.50	2.754	216.8	21.71	29.99	70.01
	No. 4	4.75	2.016	291.6	29.20	59.20	40.80
	No. 8	2.37	1.474	94.9	9.50	68.70	31.30
	No. 16	1.18	1.077	51.1	5.12	73.82	26.18
	No. 30	0.60	0.795	42.8	4.29	78.11	21.89
	No. 50	0.30	0.582	80.3	8.04	86.15	13.85
	No. 100	0.15	0.426	75.5	7.56	93.71	6.29
	No. 200	0.08	0.312	29.3	2.93	96.64	3.36
		Pan			33.5	3.36	100.00
			Total weight	998.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	1898.5
Date	5/18/98	Weight of tear	900.1
Remarks		Weight of soil	998.4



# Sieve Analysis

Weight of bags & soil	965.3
Weight of soil	948.4

Weight of empty bags	16.9
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Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site I 613	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	62.3	6.57	6.57	93.43	
	3/8 inch	9.50	2.754	188.5	19.88	26.45	73.55	
	No. 4	4.75	2.016	296.9	31.31	57.76	42.24	
	No. 8	2.37	1.474	90.3	9.52	67.28	32.72	
	No. 16	1.18	1.077	49.7	5.24	72.52	27.48	
	No. 30	0.60	0.795	46.1	4.86	77.38	22.62	
	No. 50	0.30	0.582	80.5	8.49	85.87	14.13	
	No. 100	0.15	0.426	75.0	7.91	93.78	6.22	
	No. 200	0.08	0.312	28.5	3.01	96.78	3.22	
		Pan			30.5	3.22	100.00	0.00
				Total weight	948.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	1848.2
Date	5/28/98	Weight of tear	899.9
Remarks		Weight of soil	948.3

# Sieve Analysis

Weight of empty bags 17.2

Weight of bags & soil	1176
Weight of soil	1158.8

Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 1 632	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	119.4	10.30	10.30	89.70	
	3/8 inch	9.50	2.754	262.7	22.67	32.97	67.03	
	No. 4	4.75	2.016	335.6	28.96	61.93	38.07	
	No. 8	2.37	1.474	94.0	8.11	70.05	29.95	
	No. 16	1.18	1.077	49.7	4.29	74.34	25.66	
	No. 30	0.60	0.795	48.2	4.16	78.49	21.51	
	No. 50	0.30	0.582	88.3	7.62	86.11	13.89	
	No. 100	0.15	0.426	87.5	7.55	93.67	6.33	
	No. 200	0.08	0.312	34.1	2.94	96.61	3.39	
	Pan			39.3	3.39	100.00	0.00	
				Total weight	1158.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2058.7
Date	5/20/98	Weight of tear	899.9
Remarks		Weight of soil	1158.8

## Sieve Analysis

Weight of bags & soil	1163.9
Weight of soil	1146.8

Weight of empty bags	17.1
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 633	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	100.2	8.74	8.74	91.26
	3/8 inch	9.50	2.754	257.4	22.45	31.18	68.82
	No. 4	4.75	2.016	310.4	27.07	58.25	41.75
	No. 8	2.37	1.474	100.0	8.72	66.97	33.03
	No. 16	1.18	1.077	55.0	4.80	71.76	28.24
	No. 30	0.60	0.795	57.8	5.04	76.81	23.19
	No. 50	0.30	0.582	98.3	8.57	85.38	14.62
	No. 100	0.15	0.426	94.2	8.21	93.59	6.41
	No. 200	0.08	0.312	35.9	3.13	96.72	3.28
		Pan			37.6	3.28	100.00
			Total weight	1146.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2046.7
Date	5/18/98	Weight of tear	900.0
Remarks		Weight of soil	1146.7

# Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil	1289
Weight of soil	1271.5

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 634	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	94.4	7.42	7.42	92.58
	3/8 inch	9.50	2.754	249.5	19.62	27.05	72.95
	No. 4	4.75	2.016	373.2	29.35	56.40	43.60
	No. 8	2.37	1.474	114.6	9.01	65.41	34.59
	No. 16	1.18	1.077	65.2	5.13	70.54	29.46
	No. 30	0.60	0.795	70.3	5.53	76.07	23.93
	No. 50	0.30	0.582	117.8	9.26	85.33	14.67
	No. 100	0.15	0.426	105.9	8.33	93.66	6.34
	No. 200	0.08	0.312	39.3	3.09	96.75	3.25
		Pan			41.3	3.25	100.00
			Total weight	1271.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2171.5
Date	5/28/98	Weight of tear	900.0
Remarks		Weight of soil	1271.5

# Sieve Analysis

Weight of bags & soil	1261.7
Weight of soil	1244.6

Weight of empty bags	17.1
----------------------	------

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 635	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	148.3	11.92	11.92	88.08
	3/8 inch	9.50	2.754	257.3	20.67	32.59	67.41
	No. 4	4.75	2.016	341.4	27.43	60.02	39.98
	No. 8	2.37	1.474	103.1	8.28	68.30	31.70
	No. 16	1.18	1.077	58.0	4.66	72.96	27.04
	No. 30	0.60	0.795	57.8	4.64	77.61	22.39
	No. 50	0.30	0.582	104.5	8.40	86.00	14.00
	No. 100	0.15	0.426	98.2	7.89	93.89	6.11
	No. 200	0.08	0.312	38.0	3.05	96.95	3.05
		Pan			38.0	3.05	100.00
			Total weight	1244.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2144.6
Date	5/28/98	Weight of tear	900.0
Remarks		Weight of soil	1244.6

## Sieve Analysis

Weight of empty bags      17.1

Weight of bags & soil      1183.8  
Weight of soil              1166.7

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 1 636	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	88.6	7.60	7.60	92.40
	3/8 inch	9.50	2.754	259.8	22.27	29.87	70.13
	No. 4	4.75	2.016	350.1	30.01	59.88	40.12
	No. 8	2.37	1.474	99.8	8.56	68.44	31.56
	No. 16	1.18	1.077	53.4	4.58	73.01	26.99
	No. 30	0.60	0.795	54.2	4.65	77.66	22.34
	No. 50	0.30	0.582	97.2	8.33	85.99	14.01
	No. 100	0.15	0.426	88.9	7.62	93.61	6.39
	No. 200	0.08	0.312	34.7	2.97	96.59	3.41
		Pan			39.8	3.41	100.00
			Total weight	1166.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2066.6
Date	5/18/98	Weight of tear	900.1
Remarks		Weight of soil	1166.5

## **Site 2**

# Segregation Survey

Date of Survey: Dec. 3, 1997

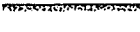

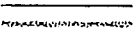
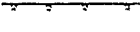


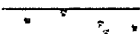


Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: B 94 Direction: West  
 Region: Utah Mile Post: from West of Ellery Intersectio  
 Section Number: 1 Test Site Number: 2 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**     
**Systematic**     
**Random**   

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

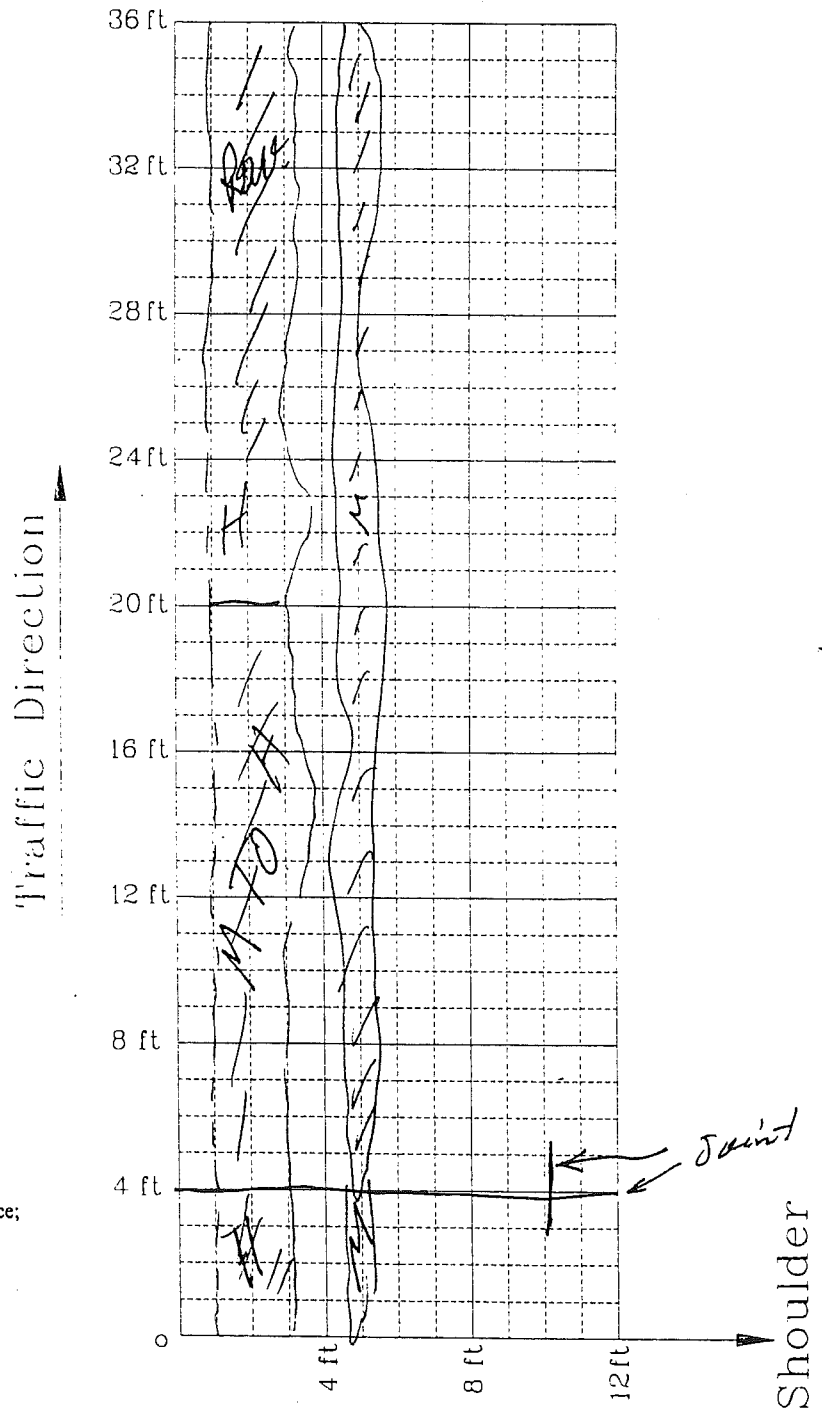
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

Temp. 36°F

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: 36°

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: **BL 94** Direction: **WEST**

Region: **UNIVERSITY** Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

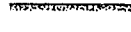
Section Number: \_\_\_\_\_ Test Site Number: **2** ADT: \_\_\_\_\_


**W of ELLERY AVE**  
Segregation Map

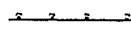
### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**  \_\_\_\_\_

**Systematic**  \_\_\_\_\_

**Random**  \_\_\_\_\_

*end of load*

### Degree of Segregation

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

- Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

- Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

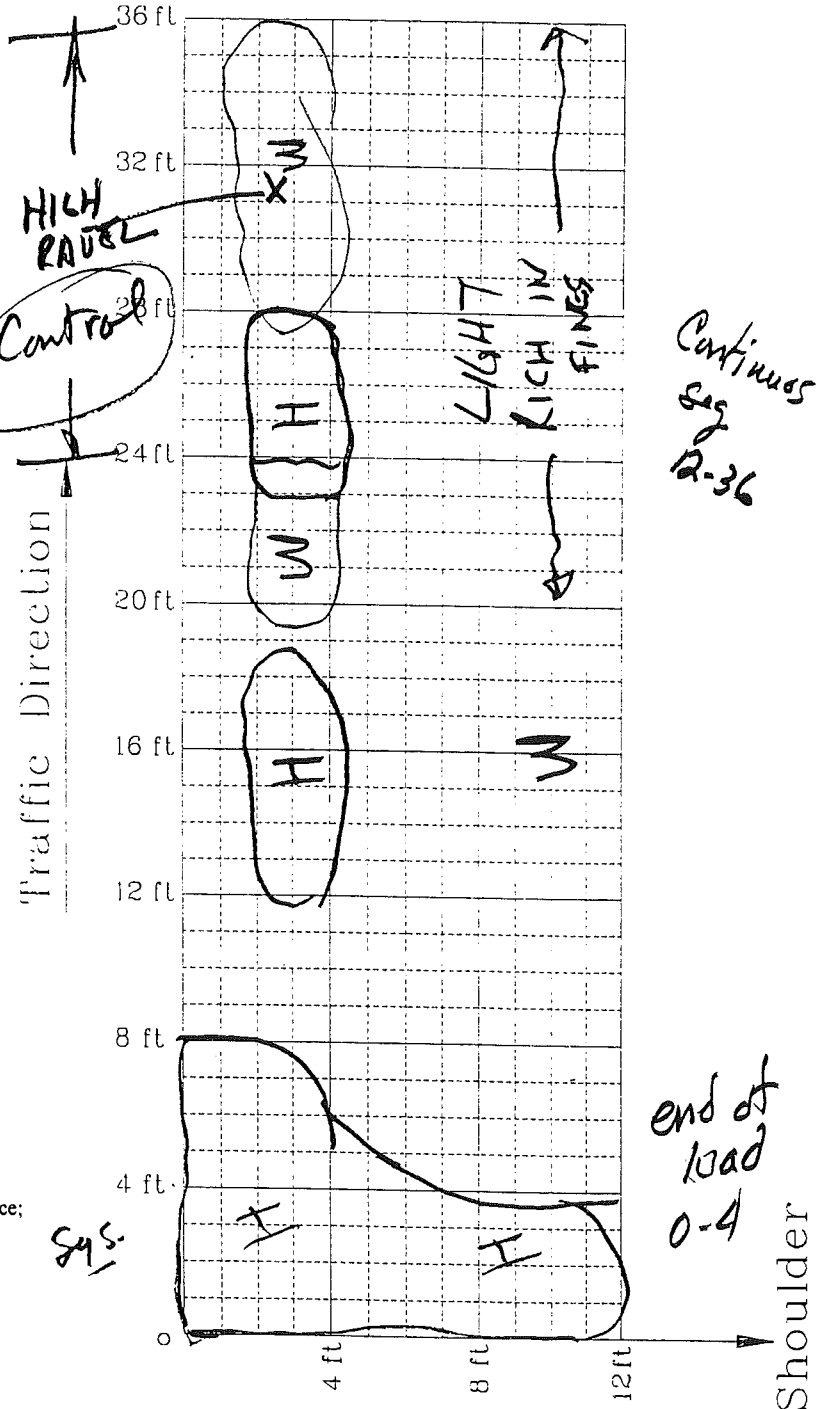
- Low  Moderate  High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

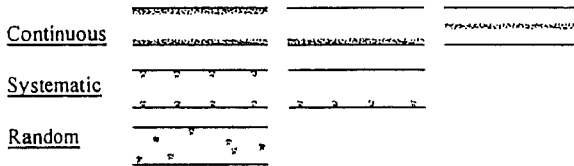
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 138 Route: BL-94 Direction: West  
 Region: Univ. Mile Post: from E. Mch to Elroy  
 Section Number: 1 Test Site Number: 2 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy:** stone against stone, little or no matrix (fine)
- Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low  Moderate  High
- Low:** aggregate or binder has started to wear away, but not progressed significantly
- Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low  Moderate  High
- Low:** a crack with a mean width  $\leq 0.25$  in.
- Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth** None

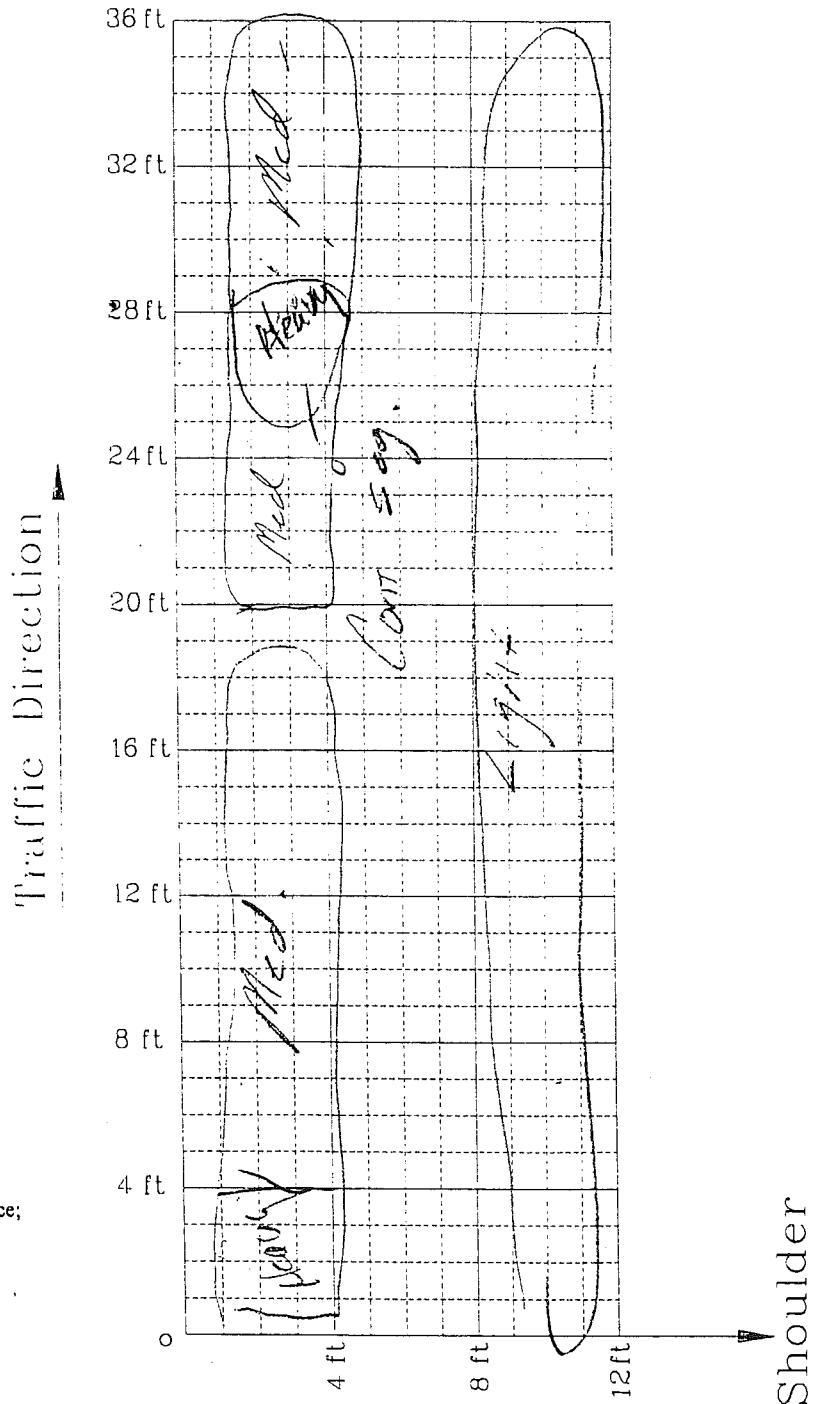
**4. Flushing**

- Low  Moderate  High
- Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt
- High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*High potential for IFAE being*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

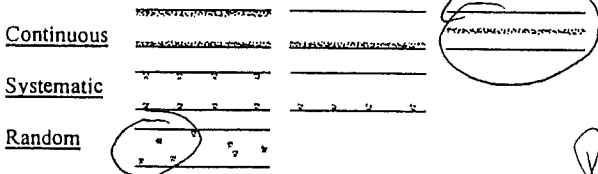
Weather:

Surveyor: L (your name)  
 Control Section Number: \_\_\_\_\_ Route: B4 94 Direction: West  
 Region: University Mile Post: from ELLeRY Rd to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 2 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

- Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

- Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

- Low       Moderate       High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

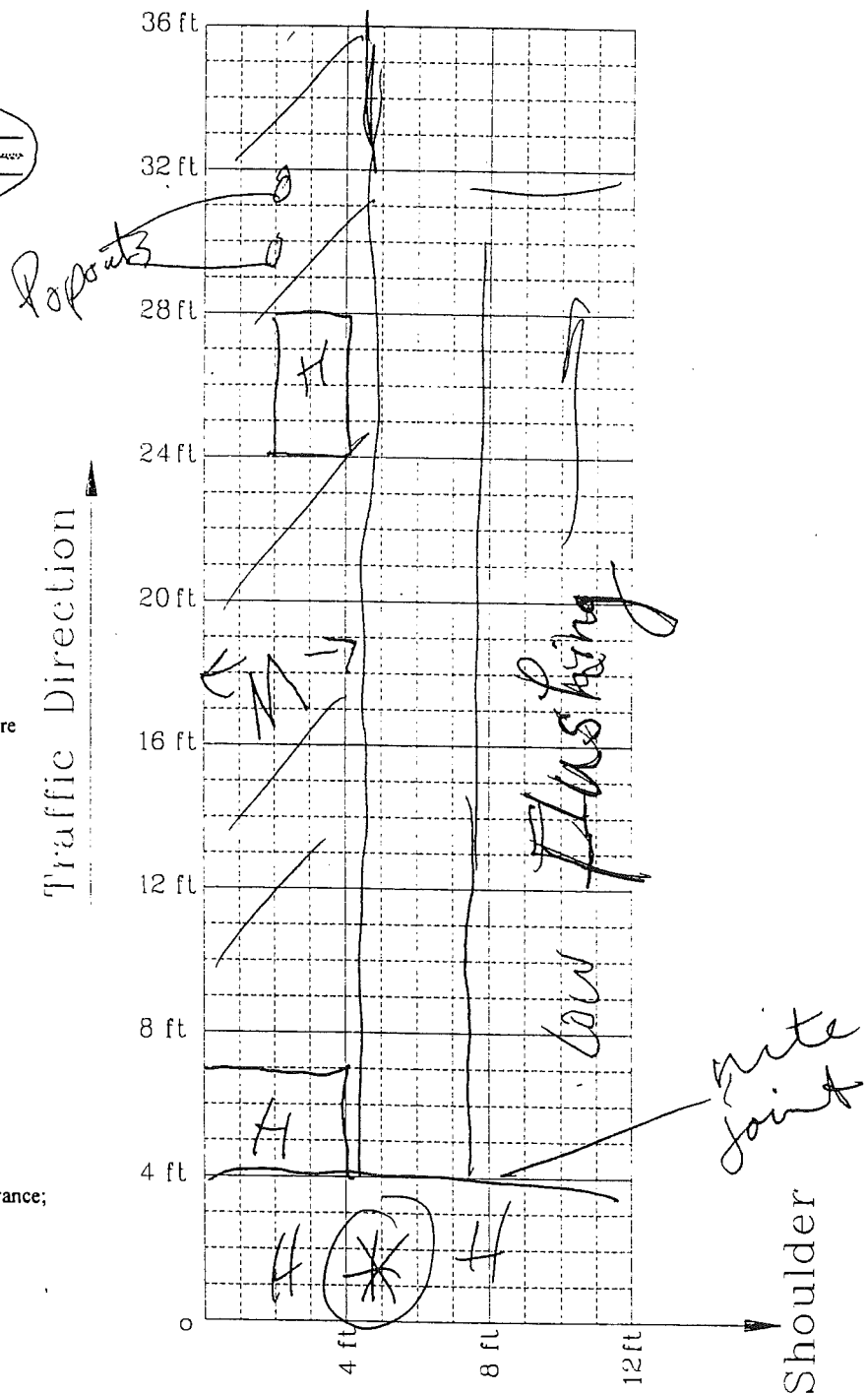
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

end of load \*

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

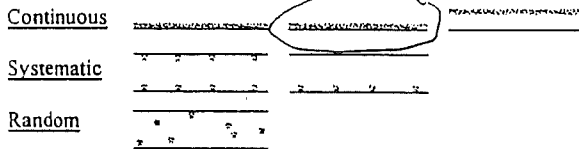
Weather: cloudy 30°

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 1 Route: BL-94 Direction: Westbd.  
 Region: University Mile Post: from Elbery Rd to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 2 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat

**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low     Moderate     High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low     Moderate     High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low-severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low     Moderate     High

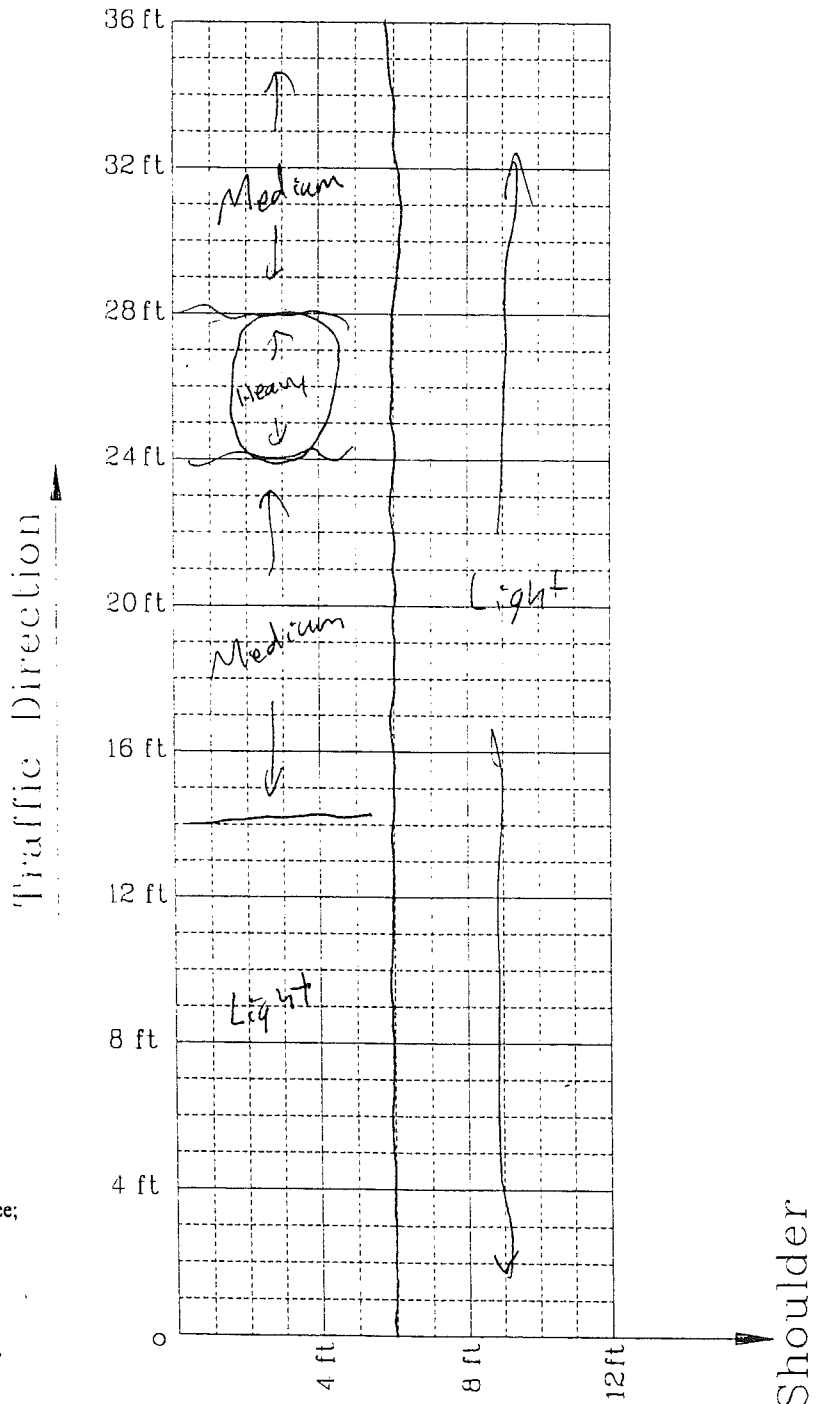
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name) *ELC*  
 Control Section Number: \_\_\_\_\_ Route: *94* Direction: *WEST*  
 Region: *UNIVERSITY* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: *1* Test Site Number: *2* ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High  
Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

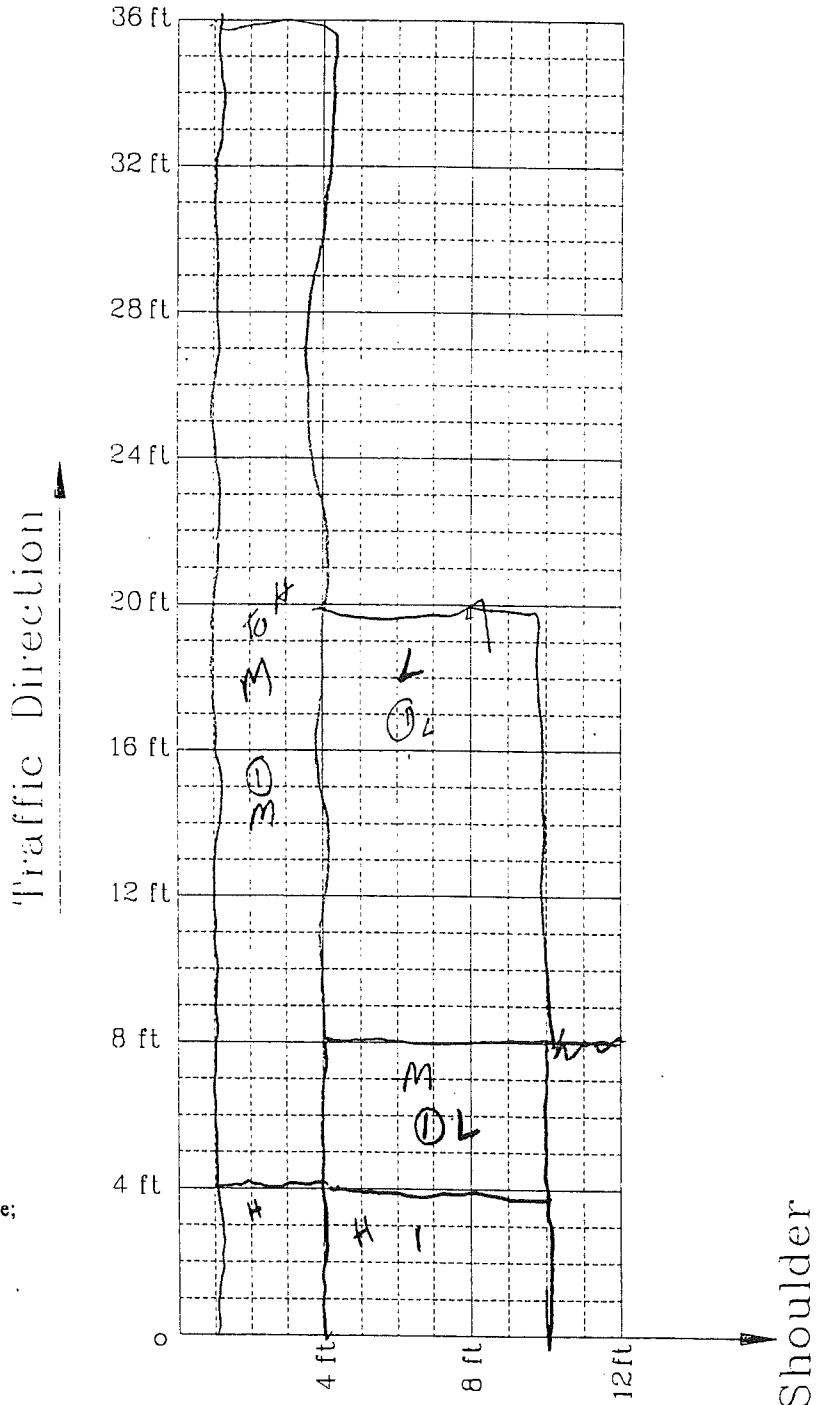
**3. Rut Depth**

**4. Flushing**

Low       Moderate       High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

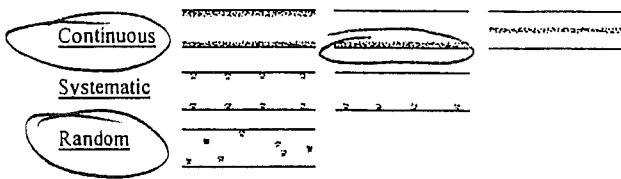
Weather: Cold, overcast

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: B 94 Direction: West  
 Region: University 8 Mile Post: from Elley, west to \_\_\_\_\_  
 Section Number: 1 ~~2~~ Test Site Number: 2 ADT: \_\_\_\_\_  
 Comm

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

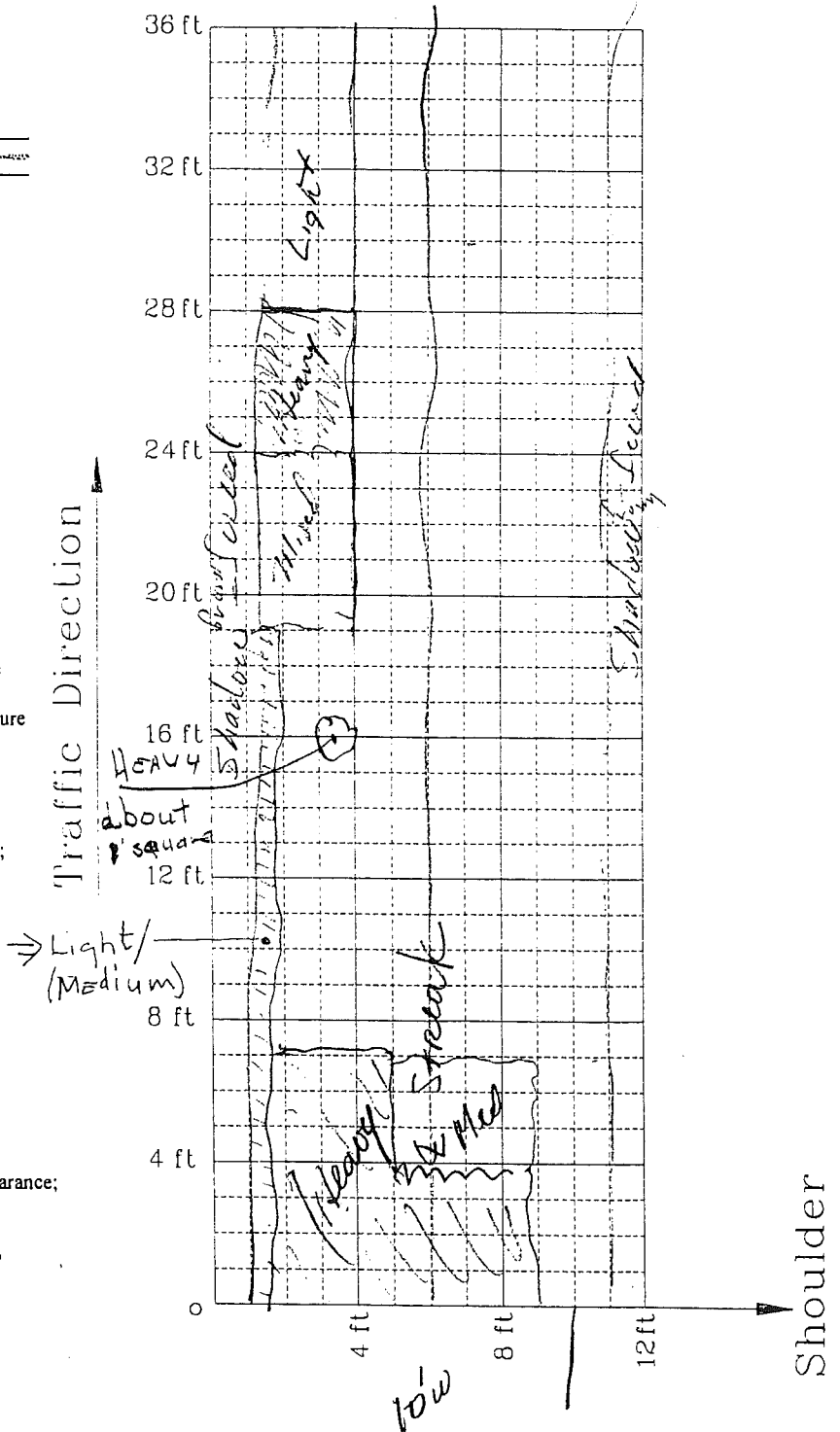
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

COMMENTS *W. 11 ravel over winter*

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997  
 Weather: cloudy mid 30's

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 38 Route: I-94 BL Direction: WB  
 Region: UNIVERSITY Mile Post: from Ellery to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: #2 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

- Continuous
- Systematic
- Random

**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low       Moderate       High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low       Moderate       High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

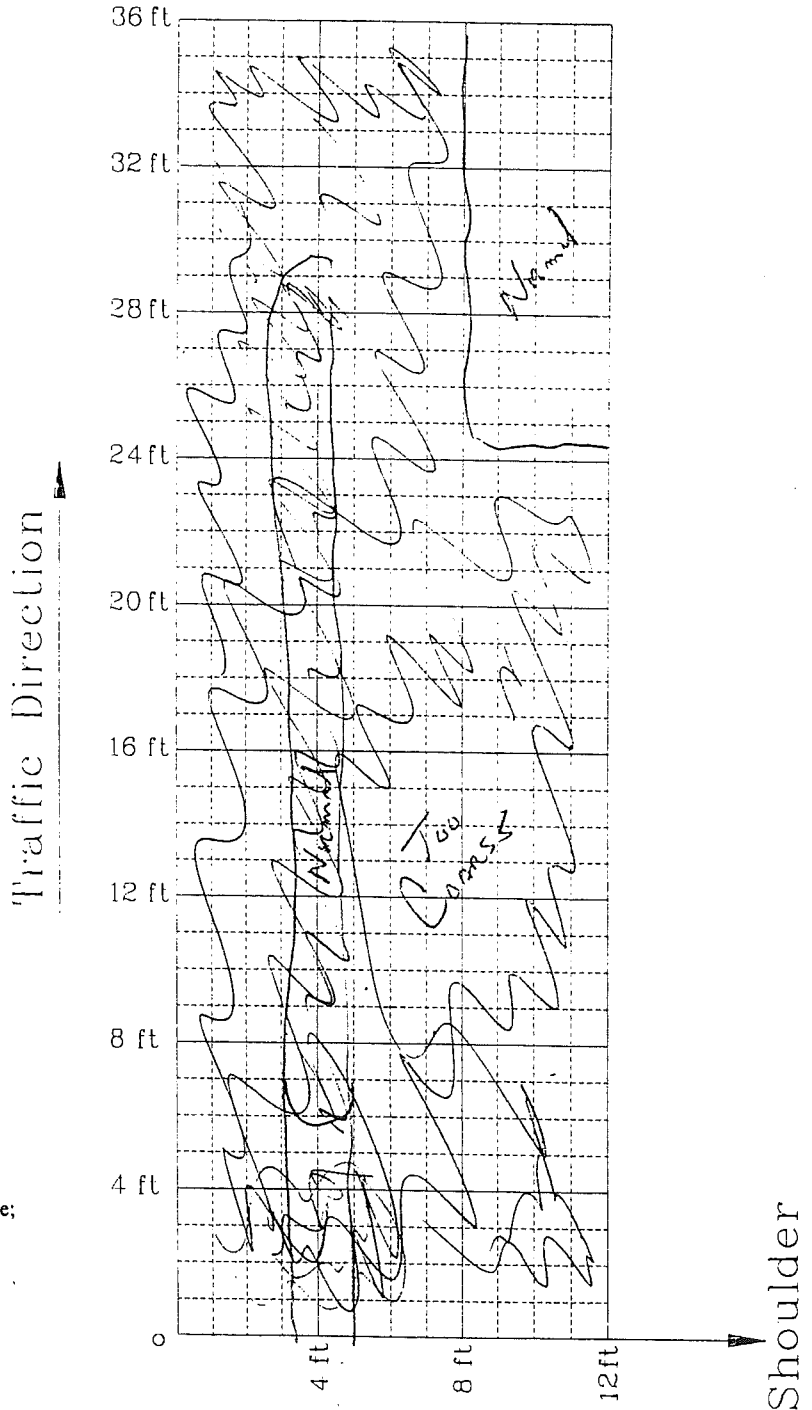
**4. Flushing**

- Low       Moderate       High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

MIX APPEARS TOO COARSE  
 SCREED TEARING SURFACE

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

3, ~ 37' E

# Segregation Survey

Date of Survey: Dec. 3, 1997

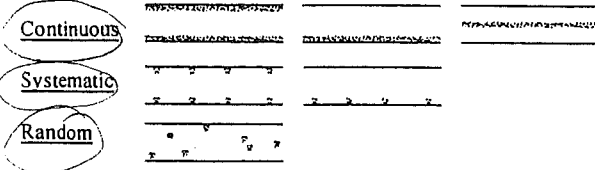
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: B1 94 Direction: W PST  
 Region: University Mile Post: from 112 mi (100 ft) to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 2 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be identified

#### 1. Raveling

Low  Moderate  High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

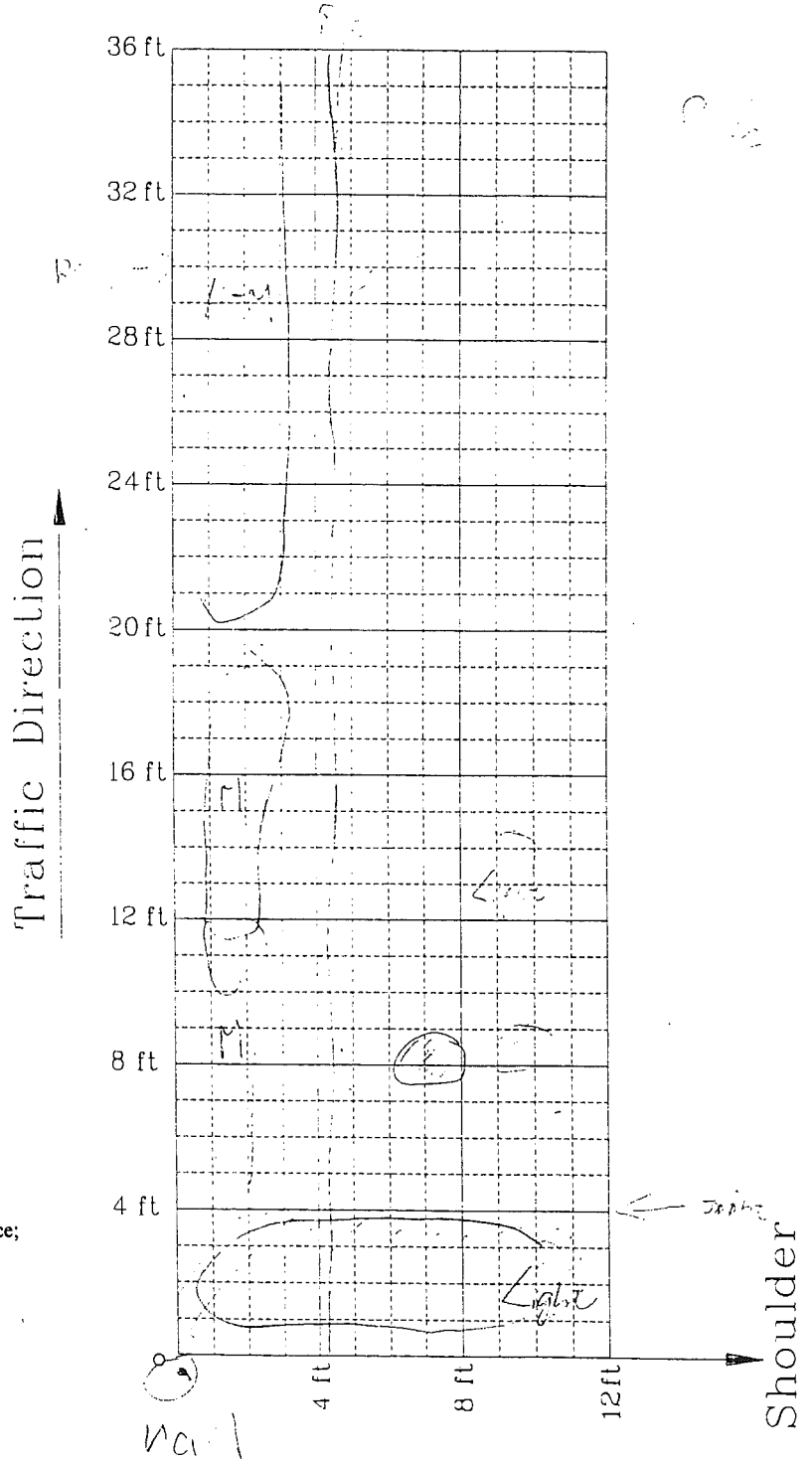
#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



## Nuclear Density Sampling Data (Jan. 16, 1998)

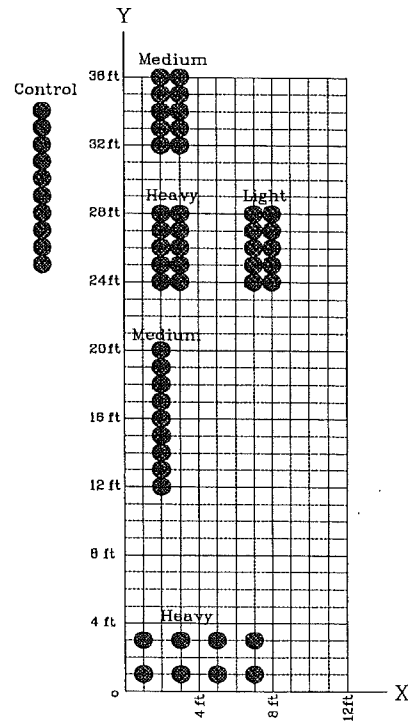
**SITE 2**      **Michigan Ave. W.Bound (in front of Foote Hospital), Jackso**

Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2850
	Moisture	670

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Control		Sample 1		Sample 2		Sample 3	
Outside		Medium		Heavy		Light (Fine)	
Control 1	136.2	0236	136.5	0228	137.5	0728	146.3
Control 2	139.5	0235	136.8	0227	137.6	0727	146.5
Control 3	139.4	0234	131.7	0226	137.4	0726	146.7
Control 4	134.8	0233	135.0	0225	138.6	0725	146.1
Control 5	136.8	0232	135.8	0224	137.4	0724	147.0
Control 6	136.8	0336	137.5	0328	140.0	0828	145.4
Control 7	139.0	0335	137.7	0327	140.7	0827	147.1
Control 8	138.5	0334	140.3	0326	138.2	0826	144.2
Control 9	141.4	0333	133.3 (14	0325	139.2	0825	146.8
Control 10	140.3	0332	141.4	0324	138.3	0824	146.5
mean	138.3	mean	137.0	mean	138.5	mean	146.3
std.	2.05	std.	2.85	std.	1.15	std.	0.87

Sample 4		Sample 5	
Medium		Heavy	
0220	139.8	0103	136.3
0219	138.7	0303	135.9
0218	137.8	0503	145.5
0217	133.8	0703	138.7
0216	132.7	0101	134.6
0215	132.4	0301	139.3
0214	135.9	0501	142.9
0213	134.7	0701	143.1
0212	137.5	mean	139.5
mean	135.9	std.	3.94
std.	2.68		



# Site 3

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: BL 94 Direction: East

Region: Unit Mile Post: from East of Ellington ~~to~~ ADT: Av. Intersected

Section Number: 1 Test Site Number: 3

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

- Continuous
- Systematic
- Random

### Degree of Segregation

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

- Low       Moderate       High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

- Low       Moderate       High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

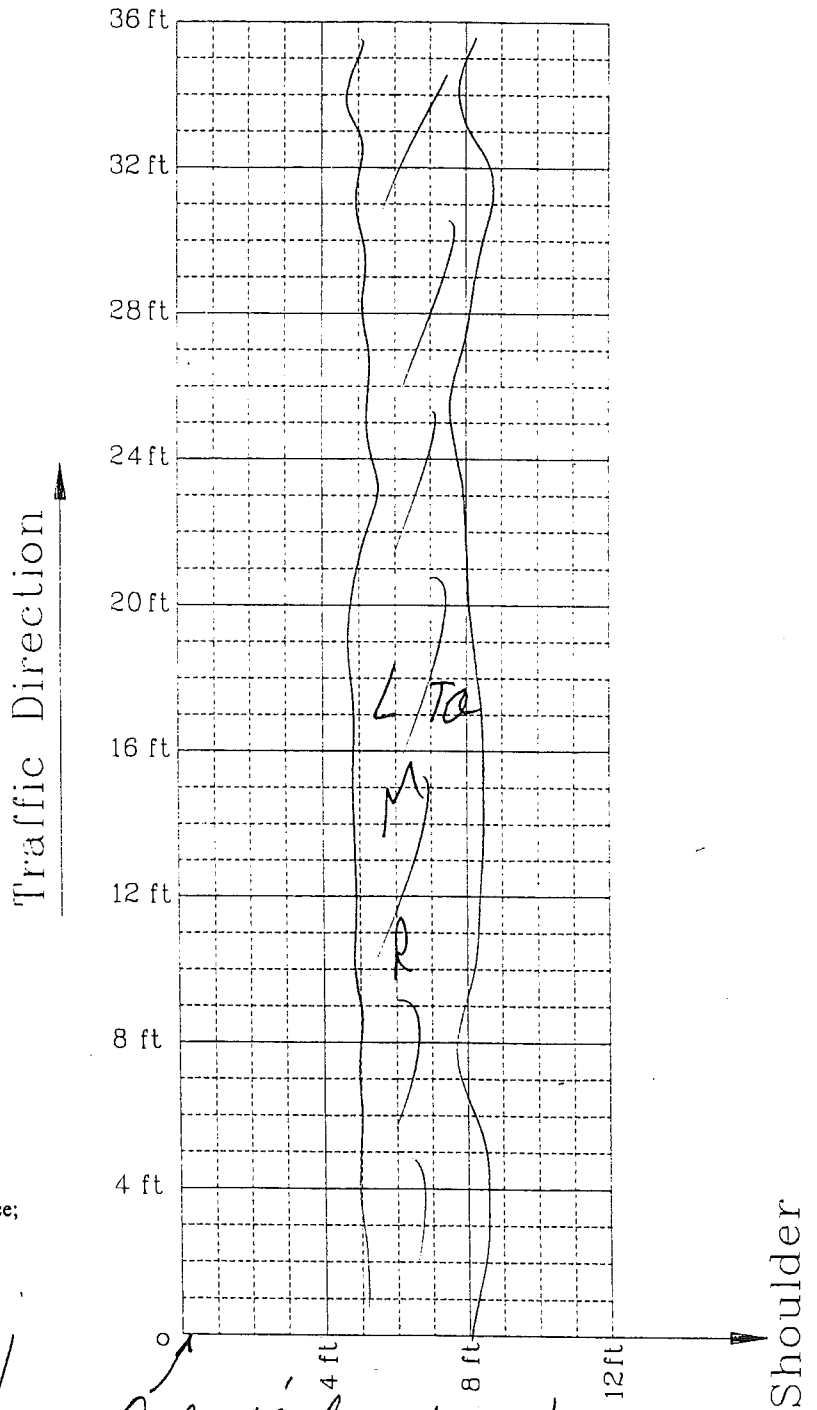
- Low       Moderate       High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

*light to med. seg  
Potential for future rav.*

*@ a 10' long young tree*

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

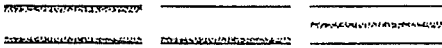
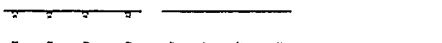

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: BL 94 Direction: East  
 Region: UNIVERSITY Mile Post: from East of Page  
 Section Number: \_\_\_\_\_ Test Site Number: 23 ADT: \_\_\_\_\_

East of ~~Page~~ Page.  
 Segregation Map

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

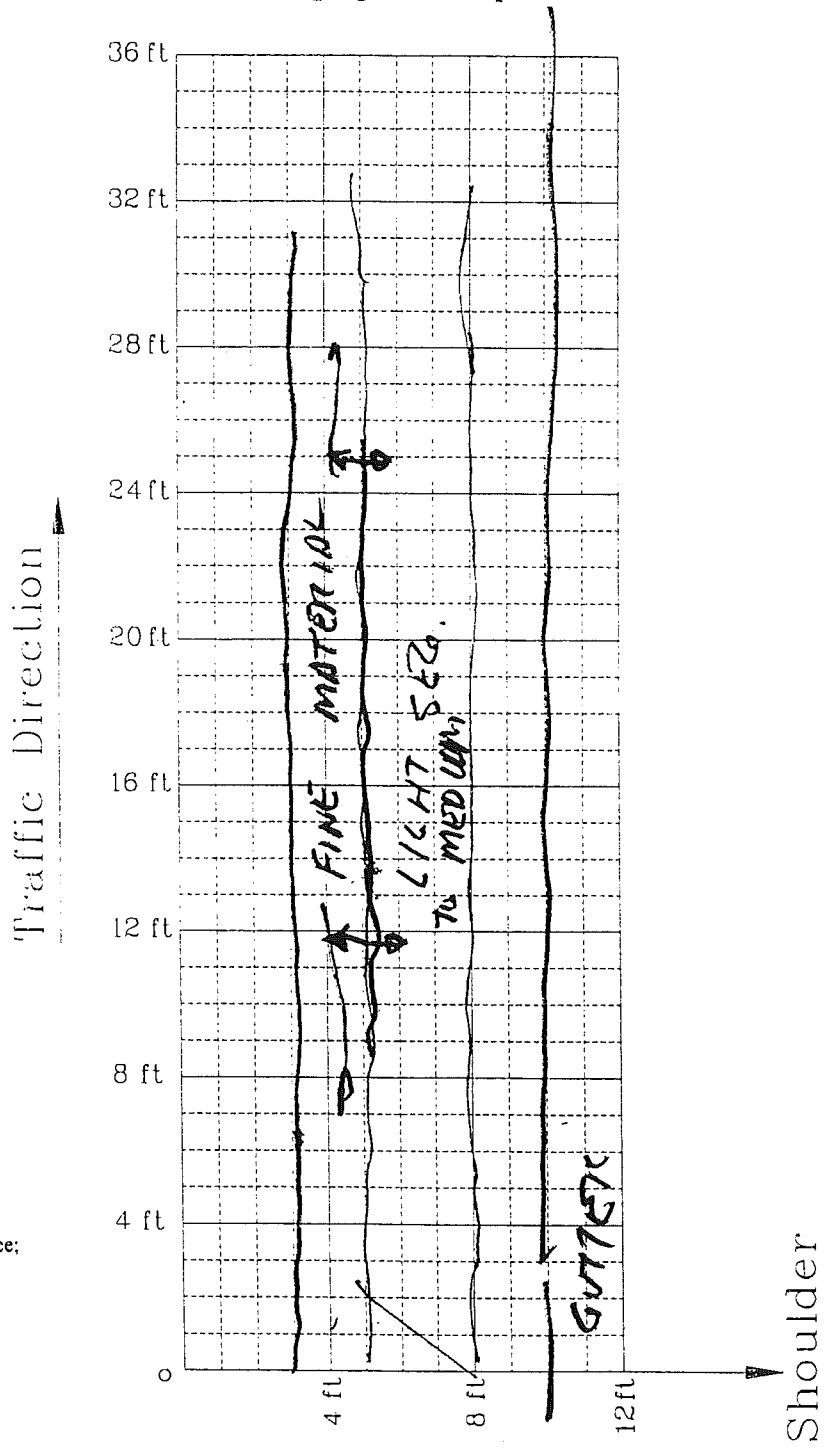
Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name) BC  
 Control Section Number: \_\_\_\_\_ Route: 94 Direction: EAST of page  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 2 Test Site Number: 3 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
**Random** \_\_\_\_\_

## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low     Moderate     High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low     Moderate     High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low-severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low     Moderate     High

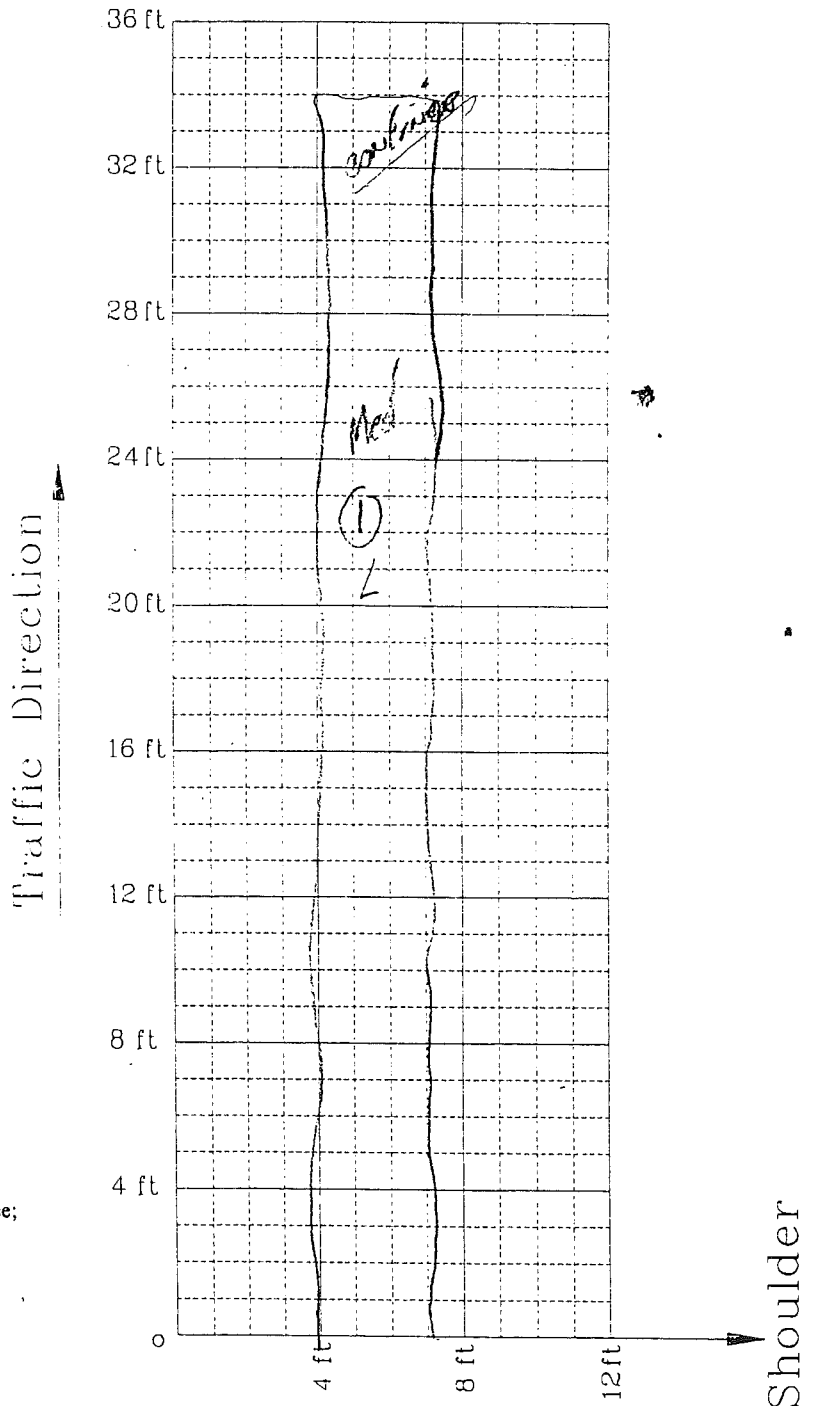
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

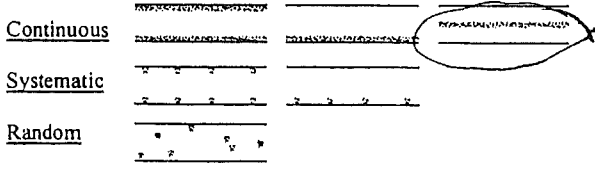
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: BL-94 Direction: Eastbd.  
 Region: University Mile Post: from Page Ave to Summit  
 Section Number: 2 Test Site Number: 3 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

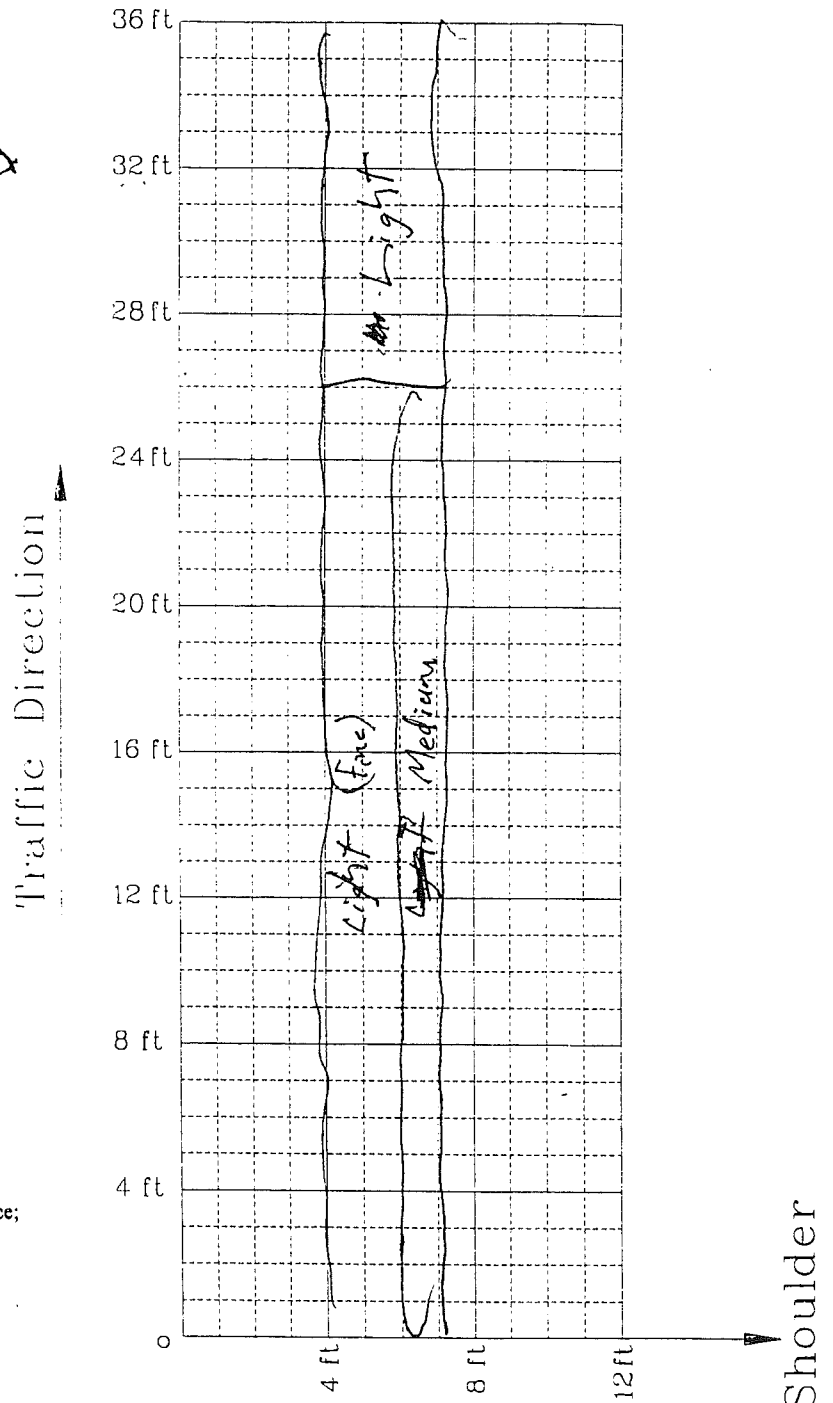
**4. Flushing**

Low       Moderate       High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 1 Route: B1-94 Direction: East  
 Region: Univ Mile Post: from Page to Summit  
 Section Number: 1 Test Site Number: 3 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
**Random** \_\_\_\_\_

**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth** None

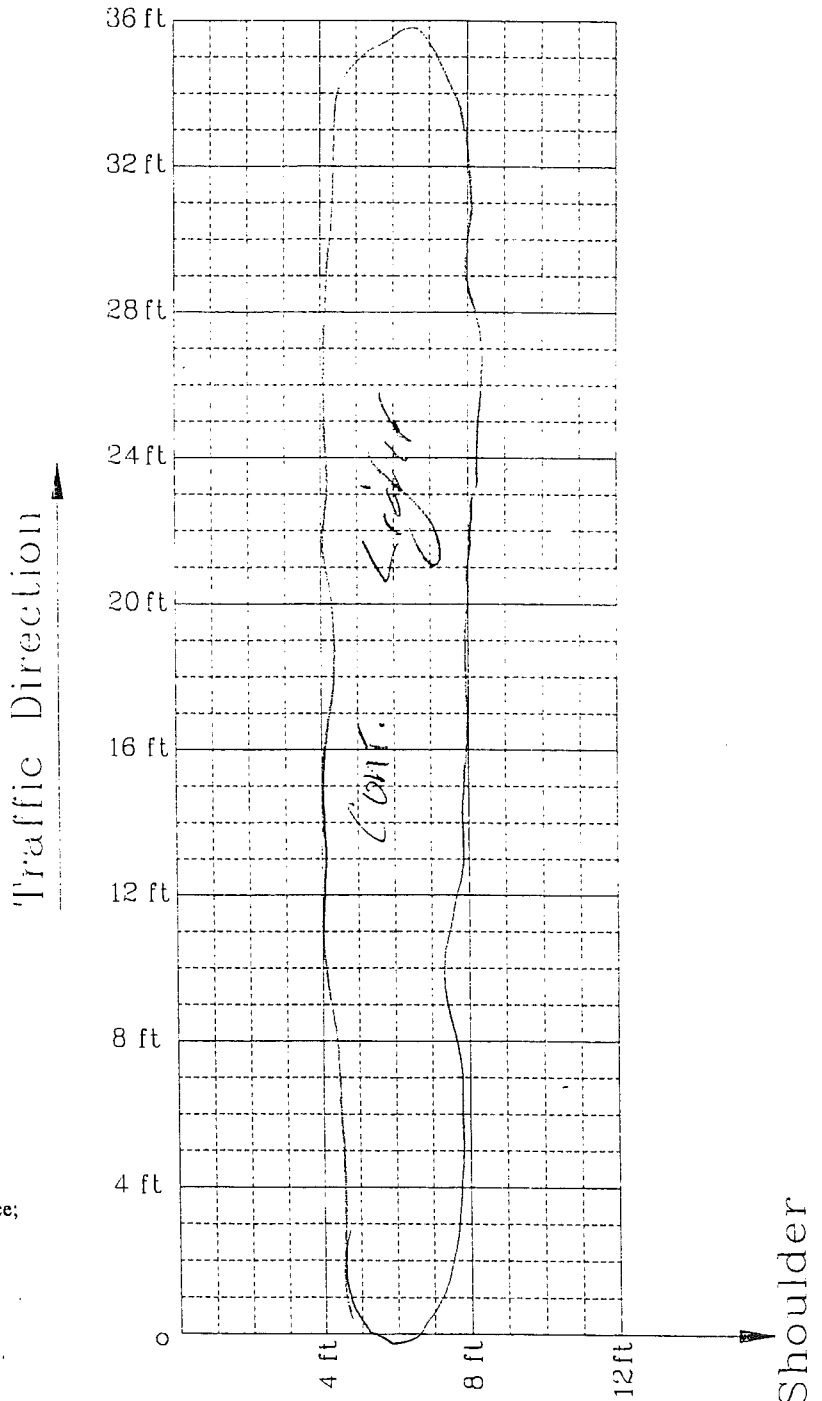
**4. Flushing**

Low       Moderate       High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: \_\_\_\_\_

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: BL-94 Direction: EAST  
 Region: University Mile Post: from E. of Page to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 3 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous

Systematic

Random

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

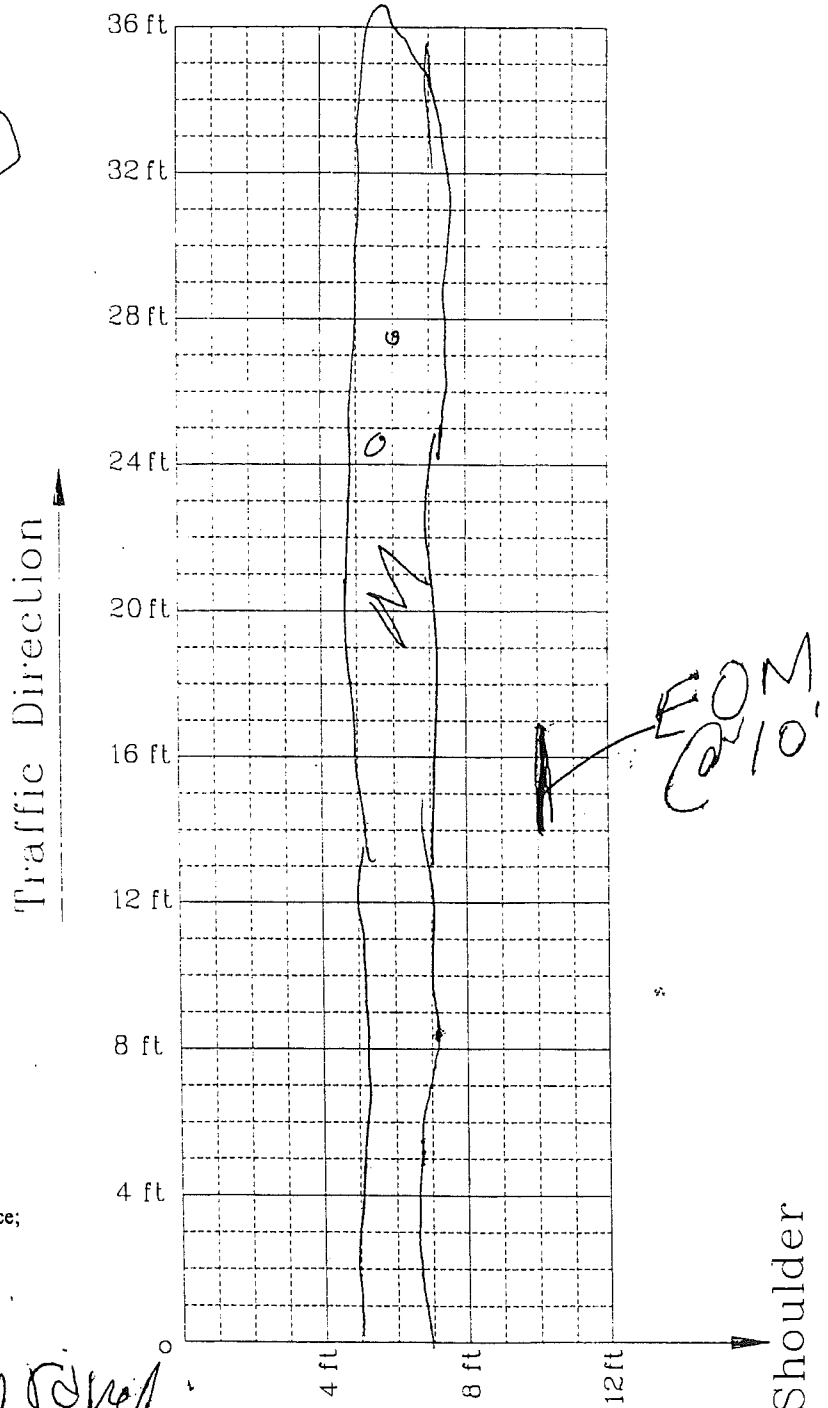
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

*spots of beginning raveling  
 Lite to Medium Seg.*

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: Cold, Damp

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 38 --- Route: B-94 Direction: East  
 Region: University - (8) Mile Post: from ? to ?  
 Section Number: ~~1~~ Test Site Number: ~~1~~ 3 ADT: Same as Site 2  
 EAST OF FAIGE AVE.

## Definition of Segregation:

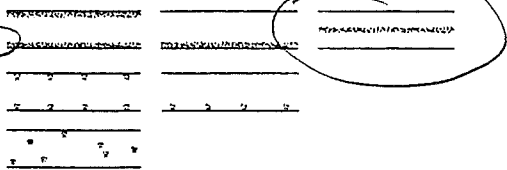
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

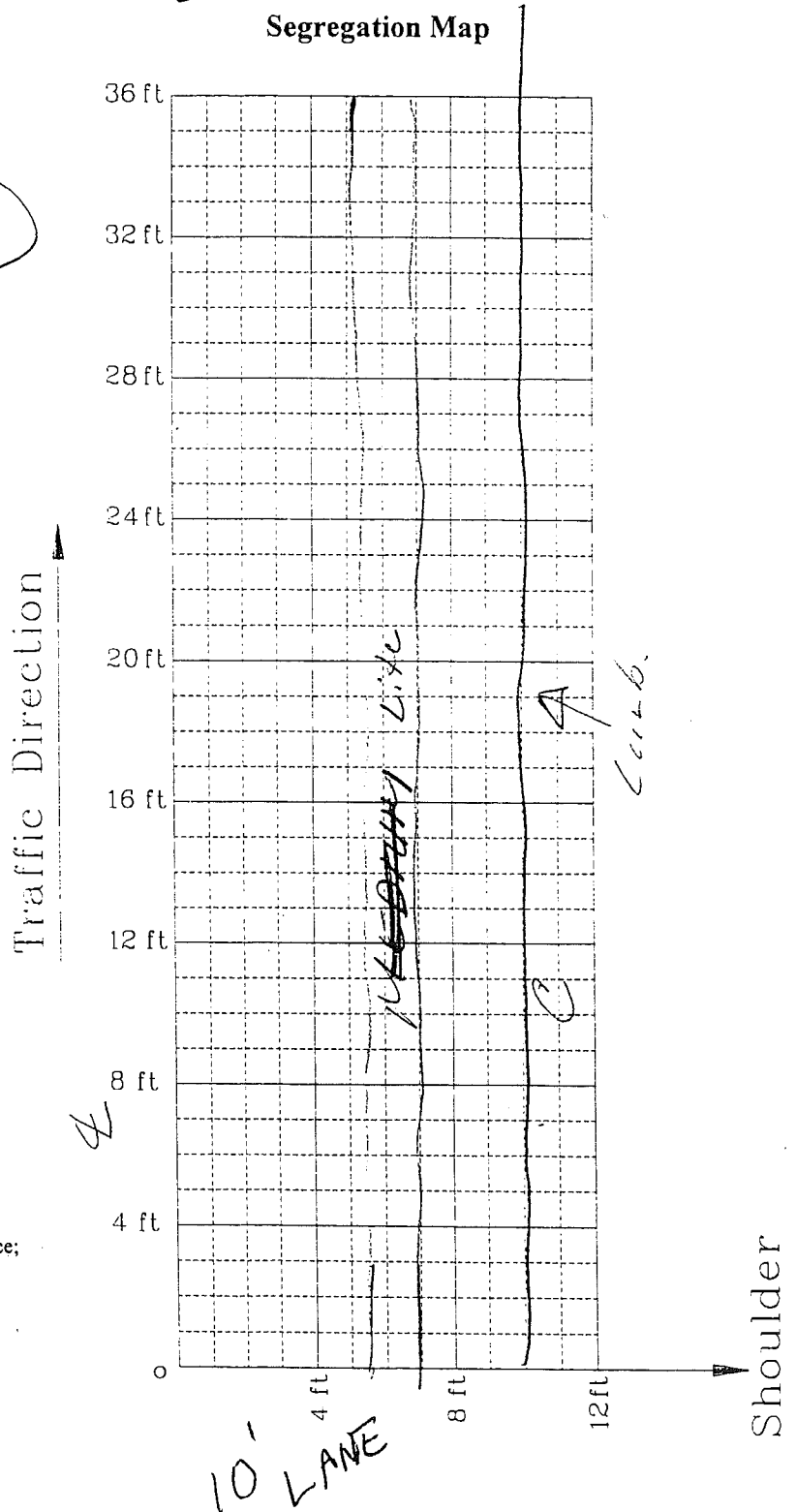
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: cloudy 38°

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: 30-2-2 Route: I-94 BL Direction: EB

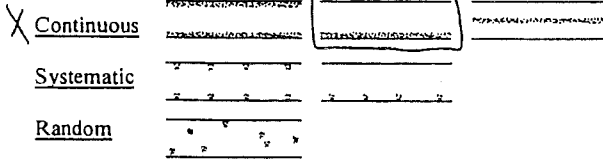
Region: UNIVERSITY Mile Post: from E. of Page to \_\_\_\_\_

Section Number: #32 Test Site Number: #A3 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

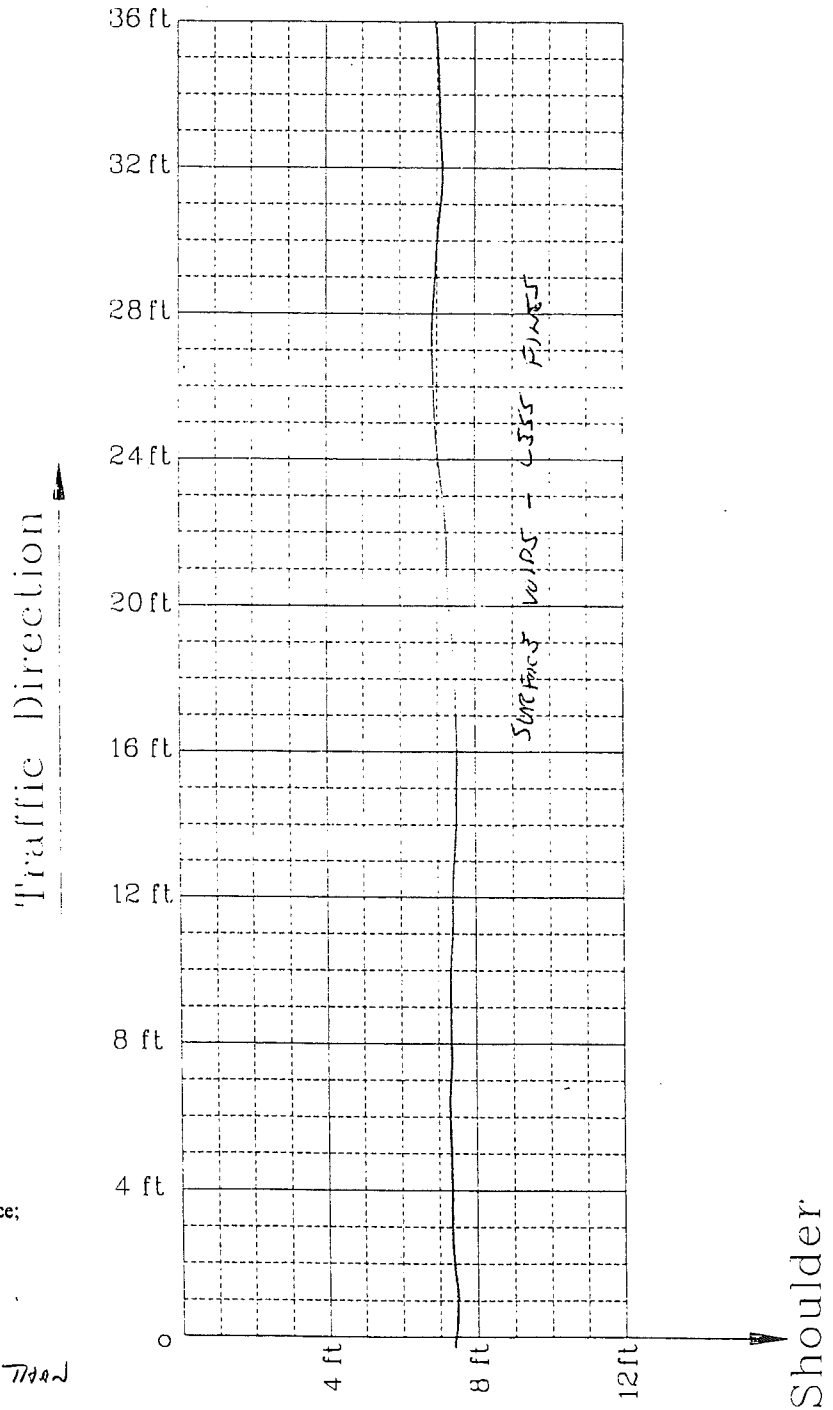
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

LESS FINES IN SURFACE OF RT WP THAN LT WP

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: \_\_\_\_\_

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: \_\_\_\_\_

Region: University Region Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: 24 Test Site Number: 2 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

<u>Continuous</u>	
<u>Systematic</u>	
<u>Random</u>	

**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low       Moderate       High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low       Moderate       High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

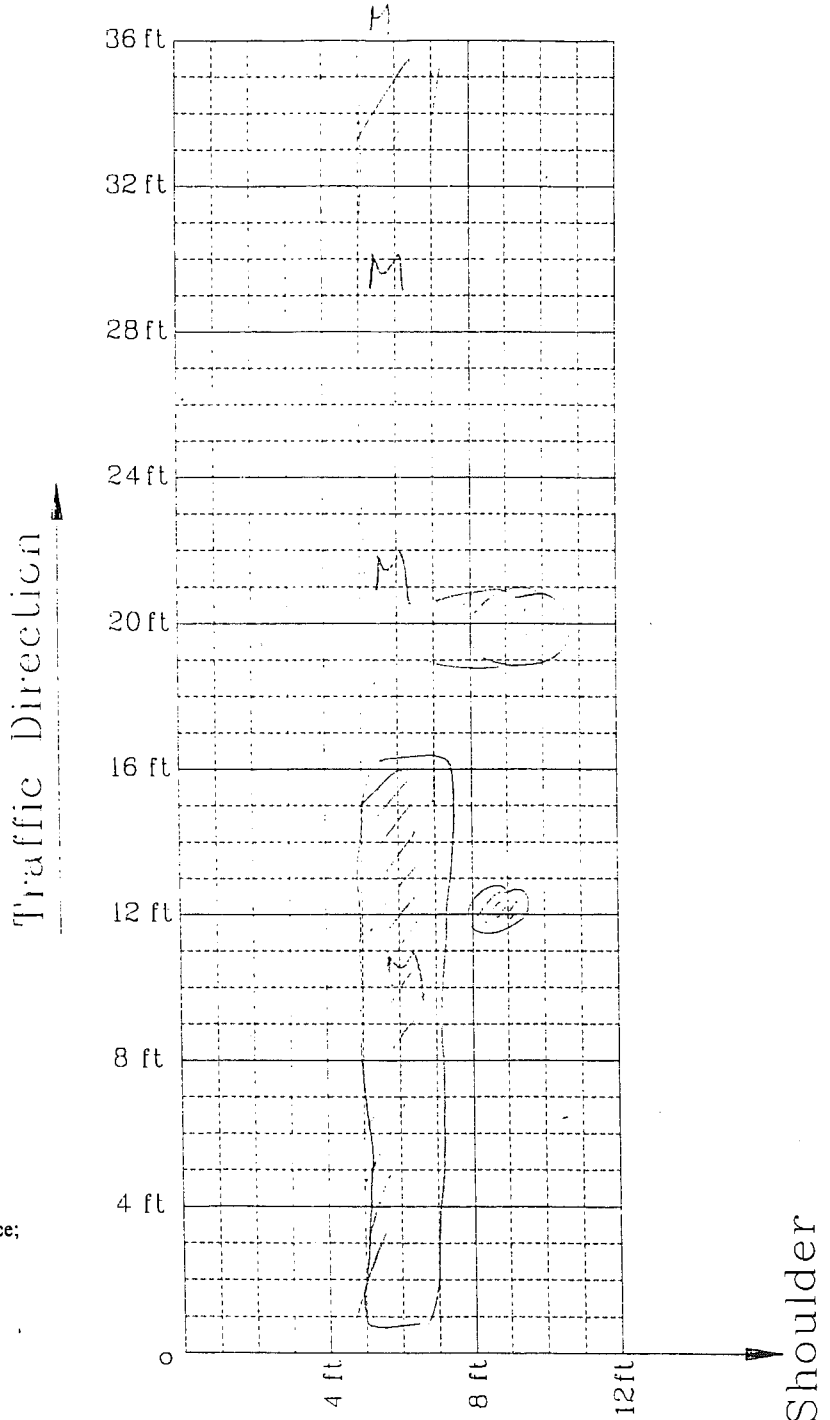
**3. Rut Depth**

**4. Flushing**

- Low       Moderate       High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Nuclear Density Sampling Data (Jan. 16, 1998)

**SITE 3**

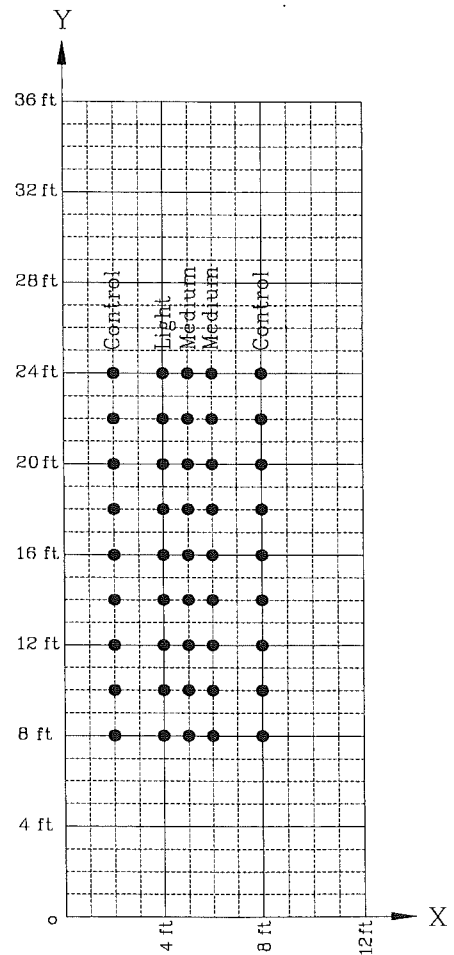
**Michigan Ave. E.Bound, Jackson**

Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2850
	Moisture	670

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 3	
Control		Light		Medium	
0224	145.9	0424	144.2	0524	142.8
0222	144.8	0422	141.9	0522	142.6
0220	145.4	0420	143.5	0520	142.4
0218	148.7	0418	143.6	0518	144.2
0216	146.2	0416	144.4	0516	142.6
0214	146.3	0414	142.2	0514	142.5
0212	149.0	0412	144.3	0512	141.3
0210	148.4	0410	144.6	0510	141.0
0208	148.3	0408	144.7	0508	142.3
mean	147.0	mean	143.7	mean	142.4
std.	1.59	std.	1.03	std.	0.91

Sample 4		Sample 5	
Medium		Control	
0624	143.2	0824	141.3
0622	142.1	0822	143.2
0620	141.1	0820	143.0
0618	141.5	0818	142.5
0616	142.8	0816	143.4
0614	143.5	0814	143.5
0612	143.1	0812	143.3
0610	141.7	0810	142.7
0608	143.0	0808	143.7
mean	142.4	mean	143.0
std.	0.86	std.	0.73



## Nuclear Density Sampling Data (April 9, 1998)

**SITE 3**

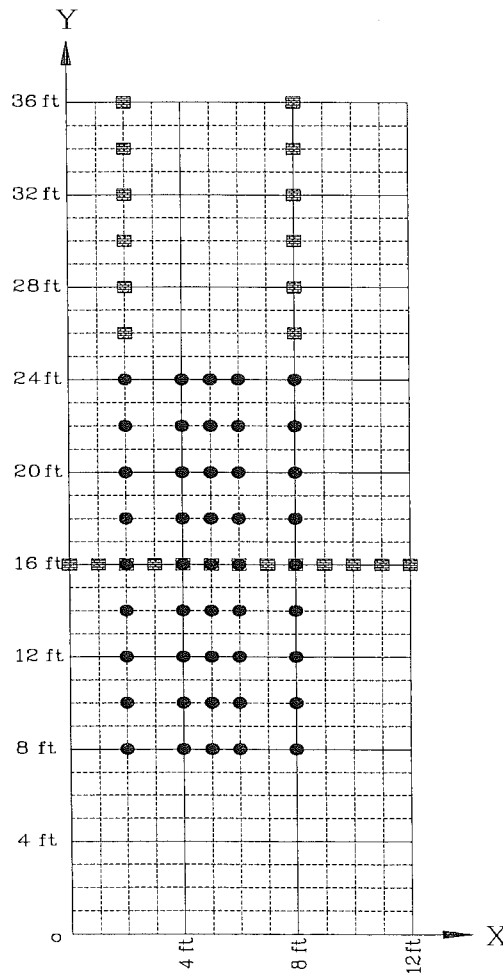
**Michigan Ave. E.Bound, Jackson**

Chart Standard	Density	2863
	Moisture	652
Operating Standard	Density	2870
	Moisture	658

Gauge No.	101953
Model	Troxler 3440
Inspector	Joe

Control		Control	
<b>0236</b>	140.4	<b>0836</b>	141.7
<b>0234</b>	141.9	<b>0834</b>	141.1
<b>0232</b>	140.5	<b>0832</b>	140.5
<b>0230</b>	144.0	<b>0830</b>	141.2
<b>0228</b>	145.3	<b>0828</b>	143.1
<b>0226</b>	143.3	<b>0826</b>	143.9
mean	142.6	mean	141.9
std.	1.97	std.	1.31

Transverse	
<b>0116</b>	141.7
<b>0216</b>	142.6
<b>0316</b>	142.7
<b>0416</b>	138.7
<b>0516</b>	140.1
<b>0616</b>	142.4
<b>0716</b>	144.7
<b>0816</b>	143.4
<b>0916</b>	137.2
mean	141.5
std.	2.39



Date 5/20/98 Highway                       
 Tested By Joel Davenport Site Site 3  
 Checked By                       
 Remarks                     

1	2	3	4	5	6	7	8	9	10
Specimen Number	Course Description	Weight in air (g)	SSD Weight (g)	Weight in water (g)	Volume (SSD) [4-5](cm <sup>3</sup> )	Volume (air) [3-5](cm <sup>3</sup> )	Specific Gravity SSD [4/6]	Specific Gravity air [3/7]	Remarks
412		1583.5	1587.4	898.5	688.9	685.0	2.304	2.312	
420		1666.6	1671.1	944.6	726.5	722.0	2.300	2.308	
612		1503.3	1509.3	854.1	655.2	649.2	2.304	2.316	
622		1523.8	1529.2	873.4	655.8	650.4	2.332	2.343	
	5/27/98								
214		1692.8	1694.2	983.3	710.9	709.5	2.383	2.386	
218		1638.8	1640.1	954.3	685.8	684.5	2.392	2.394	
410		1433.6	1436.0	818.5	617.5	615.1	2.326	2.331	
414		1531.9	1535.5	873.1	662.4	658.8	2.318	2.325	
418		1619.6	1624.6	921.1	703.5	698.5	2.309	2.319	
422		1582.7	1589.9	892.7	697.2	690.0	2.280	2.294	
610		1556.3	1567.0	884.6	682.4	671.7	2.296	2.317	
614		1584.0	1589.9	904.4	685.5	679.6	2.319	2.331	
618		1561.7	1571.4	886.2	685.2	675.5	2.293	2.312	
620		1523.5	1530.5	871.9	658.6	651.6	2.324	2.338	
810		1608.4	1612.6	914.8	697.8	693.6	2.311	2.319	



## Sieve Analysis

Weight of bags & soil	1555.6
Weight of soil	1537.9

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 3 210	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	5.7	0.37	0.37	99.63	
	3/8 inch	9.50	2.754	198.1	12.88	13.25	86.75	
	No. 4	4.75	2.016	466.1	30.31	43.57	56.43	
	No. 8	2.37	1.474	303.1	19.71	63.28	36.72	
	No. 16	1.18	1.077	182.4	11.86	75.14	24.86	
	No. 30	0.60	0.795	164.0	10.67	85.80	14.20	
	No. 50	0.30	0.582	96.0	6.24	92.05	7.95	
	No. 100	0.15	0.426	60.0	3.90	95.95	4.05	
	No. 200	0.08	0.312	36.9	2.40	98.35	1.65	
		Pan			25.4	1.65	100.00	0.00
			Total weight	1537.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2437.6
Date	6/9/98	Weight of tear	900.0
Remarks		Weight of soil	1537.6



## Sieve Analysis

Weight of bags & soil	1738.6
Weight of soil	1721.1

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
212	1/2 inch	12.50	3.116	3.6	0.21	0.21	99.79
	3/8 inch	9.50	2.754	205.2	11.92	12.13	87.87
	No. 4	4.75	2.016	561.1	32.60	44.73	55.27
	No. 8	2.37	1.474	305.6	17.76	62.49	37.51
	No. 16	1.18	1.077	188.1	10.93	73.42	26.58
	No. 30	0.60	0.795	166.5	9.67	83.09	16.91
	No. 50	0.30	0.582	163.1	9.48	92.57	7.43
	No. 100	0.15	0.426	57.6	3.35	95.92	4.08
	No. 200	0.08	0.312	39.9	2.32	98.23	1.77
	Pan			30.4	1.77	100.00	0.00
			Total weight	1721.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	2621.0
Date	6/9/98	Weight of tear	899.9
Remarks		Weight of soil	1721.1

## Sieve Analysis

Weight of bags & soil	1586.3
Weight of soil	1568.8

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
214	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	167.5	10.68	10.68	89.32
	No. 4	4.75	2.016	477.1	30.41	41.09	58.91
	No. 8	2.37	1.474	307.7	19.61	60.70	39.30
	No. 16	1.18	1.077	171.4	10.93	71.63	28.37
	No. 30	0.60	0.795	130.6	8.32	79.95	20.05
	No. 50	0.30	0.582	127.9	8.15	88.11	11.89
	No. 100	0.15	0.426	75.5	4.81	92.92	7.08
	No. 200	0.08	0.312	47.5	3.03	95.95	4.05
	Pan			63.6	4.05	100.00	0.00
			Total	1568.8	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2468.7
Date	6/2/98	Weight of tear	899.9
Remarks		Weight of soil	1568.8

## Sieve Analysis

Weight of bags & soil	1536.6
Weight of soil	1519.0

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
218	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	182.8	12.04	12.04	87.96
	No. 4	4.75	2.016	477.4	31.43	43.47	56.53
	No. 8	2.37	1.474	296.4	19.51	62.98	37.02
	No. 16	1.18	1.077	152.4	10.03	73.01	26.99
	No. 30	0.60	0.795	119.0	7.83	80.85	19.15
	No. 50	0.30	0.582	119.7	7.88	88.73	11.27
	No. 100	0.15	0.426	68.5	4.51	93.24	6.76
	No. 200	0.08	0.312	42.2	2.78	96.02	3.98
	Pan			60.5	3.98	100.00	0.00
			Total	1518.9	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2418.8
Date	6/2/98	Weight of tear	900.0
Remarks		Weight of soil	1518.8

## Sieve Analysis

Weight of bags & soil	1613.8
Weight of soil	1596.2

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 3 220	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	4.7	0.29	0.29	99.71
	3/8 inch	9.50	2.754	218.0	13.66	13.95	86.05
	No. 4	4.75	2.016	513.4	32.16	46.12	53.88
	No. 8	2.37	1.474	288.8	18.09	64.21	35.79
	No. 16	1.18	1.077	165.6	10.37	74.58	25.42
	No. 30	0.60	0.795	139.4	8.73	83.32	16.68
	No. 50	0.30	0.582	119.5	7.49	90.80	9.20
	No. 100	0.15	0.426	66.7	4.18	94.98	5.02
	No. 200	0.08	0.312	53.2	3.33	98.31	1.69
		Pan			26.9	1.69	100.00
			Total weight	1596.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	2496.1
Date	6/9/98	Weight of tear	899.9
Remarks		Weight of soil	1596.2

## Sieve Analysis

Weight of bags & soil	1655.7
Weight of soil	1638.2

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 222	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	11.6	0.71	0.71	99.29
	3/8 inch	9.50	2.754	258.1	15.76	16.46	83.54
	No. 4	4.75	2.016	517.3	31.58	48.04	51.96
	No. 8	2.37	1.474	289.1	17.65	65.69	34.31
	No. 16	1.18	1.077	179.1	10.93	76.62	23.38
	No. 30	0.60	0.795	157.3	9.60	86.22	13.78
	No. 50	0.30	0.582	114.8	7.01	93.23	6.77
	No. 100	0.15	0.426	49.7	3.03	96.26	3.74
	No. 200	0.08	0.312	38.2	2.33	98.60	1.40
		Pan			23.0	1.40	100.00
			Total weight	1638.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	2538.1
Date	6/9/98	Weight of tear	899.9
Remarks		Weight of soil	1638.2

## Sieve Analysis

Weight of bags & soil	1356.5
Weight of soil	1338.8

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 410	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	9.4	0.70	0.70	99.30
	3/8 inch	9.50	2.754	210.2	15.70	16.40	83.60
	No. 4	4.75	2.016	442.2	33.03	49.43	50.57
	No. 8	2.37	1.474	219.7	16.41	65.84	34.16
	No. 16	1.18	1.077	114.4	8.54	74.39	25.61
	No. 30	0.60	0.795	95.0	7.10	81.48	18.52
	No. 50	0.30	0.582	99.9	7.46	88.95	11.05
	No. 100	0.15	0.426	60.2	4.50	93.44	6.56
	No. 200	0.08	0.312	37.4	2.79	96.24	3.76
		Pan			50.4	3.76	100.00
			Total	1338.8	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2238.7
Date	6/2/98	Weight of tear	899.9
Remarks		Weight of soil	1338.8

## Sieve Analysis

Weight of bags & soil	1488.8
Weight of soil	1471.3

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 412	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	221.9	15.08	15.08	84.92
	No. 4	4.75	2.016	462.9	31.47	46.55	53.45
	No. 8	2.37	1.474	247.5	16.83	63.38	36.62
	No. 16	1.18	1.077	131.1	8.91	72.29	27.71
	No. 30	0.60	0.795	109.5	7.44	79.73	20.27
	No. 50	0.30	0.582	115.9	7.88	87.61	12.39
	No. 100	0.15	0.426	75.4	5.13	92.74	7.26
	No. 200	0.08	0.312	46.8	3.18	95.92	4.08
		Pan			60.0	4.08	100.00
			Total weight	1471.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2370.9
Date	6/2/98	Weight of tear	899.9
Remarks		Weight of soil	1471.0

## Sieve Analysis

Weight of bags & soil	1444.8
Weight of soil	1427.2

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 414	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	17.2	1.21	1.21	98.79
	3/8 inch	9.50	2.754	250.6	17.56	18.76	81.24
	No. 4	4.75	2.016	431.4	30.23	48.99	51.01
	No. 8	2.37	1.474	229.7	16.09	65.09	34.91
	No. 16	1.18	1.077	121.3	8.50	73.58	26.42
	No. 30	0.60	0.795	100.8	7.06	80.65	19.35
	No. 50	0.30	0.582	108.3	7.59	88.24	11.76
	No. 100	0.15	0.426	69.3	4.86	93.09	6.91
	No. 200	0.08	0.312	42.5	2.98	96.07	3.93
		Pan			56.1	3.93	100.00
			Total weight	1427.2	100.00		

Operator	Joel Davenport			Weight of tear & soil	2327.0
Date	6/2/98			Weight of tear	899.9
Remarks				Weight of soil	1427.1



## Sieve Analysis

Weight of bags & soil	1525.6
Weight of soil	1508.1

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 418	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	295.1	19.57	19.57	80.43
	No. 4	4.75	2.016	471.0	31.24	50.81	49.19
	No. 8	2.37	1.474	229.4	15.21	66.02	33.98
	No. 16	1.18	1.077	125.3	8.31	74.33	25.67
	No. 30	0.60	0.795	108.7	7.21	81.54	18.46
	No. 50	0.30	0.582	117.3	7.78	89.32	10.68
	No. 100	0.15	0.426	70.4	4.67	93.99	6.01
	No. 200	0.08	0.312	43.3	2.87	96.86	3.14
		Pan			47.4	3.14	100.00
			Total weight	1507.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2407.8
Date	6/2/98	Weight of tear	899.9
Remarks		Weight of soil	1507.9

## Sieve Analysis

Weight of bags & soil	1567.0
Weight of soil	1549.6

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 420	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	16.8	1.08	1.08	98.92
	3/8 inch	9.50	2.754	292.5	18.88	19.96	80.04
	No. 4	4.75	2.016	470.3	30.35	50.31	49.69
	No. 8	2.37	1.474	247.7	15.98	66.29	33.71
	No. 16	1.18	1.077	136.1	8.78	75.08	24.92
	No. 30	0.60	0.795	116.6	7.52	82.60	17.40
	No. 50	0.30	0.582	116.5	7.52	90.12	9.88
	No. 100	0.15	0.426	65.5	4.23	94.35	5.65
	No. 200	0.08	0.312	49.1	3.17	97.52	2.48
		Pan			38.5	2.48	100.00
			Total weight	1549.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2449.7
Date	6/3/98	Weight of tear	900.1
Remarks		Weight of soil	1549.6

## Sieve Analysis

Weight of bags & soil	1492.7
Weight of soil	1475.2

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 422	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	7.5	0.51	0.51	99.49
	3/8 inch	9.50	2.754	257.2	17.44	17.95	82.05
	No. 4	4.75	2.016	491.3	33.31	51.26	48.74
	No. 8	2.37	1.474	237.1	16.08	67.33	32.67
	No. 16	1.18	1.077	123.9	8.40	75.73	24.27
	No. 30	0.60	0.795	109.0	7.39	83.12	16.88
	No. 50	0.30	0.582	114.5	7.76	90.89	9.11
	No. 100	0.15	0.426	57.9	3.93	94.81	5.19
	No. 200	0.08	0.312	45.6	3.09	97.90	2.10
	Pan			30.9	2.10	100.00	0.00
			Total weight	1474.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2374.8
Date	6/3/98	Weight of tear	899.9
Remarks		Weight of soil	1474.9

## Sieve Analysis

Weight of bags & soil	1468.8
Weight of soil	1451.3

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 610	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	316.0	21.78	21.78	78.22
	No. 4	4.75	2.016	494.2	34.06	55.84	44.16
	No. 8	2.37	1.474	195.4	13.47	69.30	30.70
	No. 16	1.18	1.077	112.3	7.74	77.04	22.96
	No. 30	0.60	0.795	110.3	7.60	84.65	15.35
	No. 50	0.30	0.582	101.7	7.01	91.65	8.35
	No. 100	0.15	0.426	52.0	3.58	95.24	4.76
	No. 200	0.08	0.312	37.6	2.59	97.83	2.17
		Pan			31.5	2.17	100.00
			Total weight	1451.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2351.0
Date	6/3/98	Weight of tear	899.9
Remarks		Weight of soil	1451.1

## Sieve Analysis

Weight of bags & soil	1419.8
Weight of soil	1402.4

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
612	1/2 inch	12.50	3.116	3.4	0.24	0.24	99.76
	3/8 inch	9.50	2.754	286.2	20.41	20.65	79.35
	No. 4	4.75	2.016	503.0	35.87	56.52	43.48
	No. 8	2.37	1.474	194.4	13.86	70.38	29.62
	No. 16	1.18	1.077	94.0	6.70	77.08	22.92
	No. 30	0.60	0.795	90.2	6.43	83.51	16.49
	No. 50	0.30	0.582	103.2	7.36	90.87	9.13
	No. 100	0.15	0.426	60.0	4.28	95.15	4.85
	No. 200	0.08	0.312	39.5	2.82	97.97	2.03
	Pan			28.5	2.03	100.00	0.00
			Total weight	1402.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	2302.3
Date	6/3/98	Weight of tear	899.9
Remarks		Weight of soil	1402.4

## Sieve Analysis

Weight of bags & soil	1492.7
Weight of soil	1475.1

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
614	1/2 inch	12.50	3.116	21.4	1.45	1.45	98.55	
	3/8 inch	9.50	2.754	273.4	18.54	19.99	80.01	
	No. 4	4.75	2.016	540.6	36.66	56.65	43.35	
	No. 8	2.37	1.474	200.4	13.59	70.24	29.76	
	No. 16	1.18	1.077	104.6	7.09	77.33	22.67	
	No. 30	0.60	0.795	100.6	6.82	84.15	15.85	
	No. 50	0.30	0.582	116.8	7.92	92.07	7.93	
	No. 100	0.15	0.426	57.7	3.91	95.99	4.01	
	No. 200	0.08	0.312	38.6	2.62	98.60	1.40	
	Pan			20.6	1.40	100.00	0.00	
			Total weight	1474.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2374.5
Date	6/3/98	Weight of tear	899.9
Remarks		Weight of soil	1474.6

## Sieve Analysis

Weight of bags & soil	1477.4
Weight of soil	1459.9

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent retained	Cum. % retained	Percent passing
		(mm)	.45 power	Weight retained	Weight retained	Percent retained			
Site 3 618	3/4 inch	19.00	3.762	0.0	0.00	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	2.6	0.18	0.18	0.18	99.82	
	3/8 inch	9.50	2.754	288.5	19.76	19.94	19.94	80.06	
	No. 4	4.75	2.016	538.4	36.88	56.82	56.82	43.18	
	No. 8	2.37	1.474	198.3	13.58	70.40	70.40	29.60	
	No. 16	1.18	1.077	92.7	6.35	76.75	76.75	23.25	
	No. 30	0.60	0.795	85.3	5.84	82.59	82.59	17.41	
	No. 50	0.30	0.582	101.0	6.92	89.51	89.51	10.49	
	No. 100	0.15	0.426	62.7	4.29	93.81	93.81	6.19	
	No. 200	0.08	0.312	39.3	2.69	96.50	96.50	3.50	
		Pan			51.1	3.50	100.00	100.00	0.00
			Total weight	1459.9	100.00				

Operator	Joel Davenport	Weight of tear & soil	2359.8
Date	6/3/98	Weight of tear	899.9
Remarks		Weight of soil	1459.9

# Sieve Analysis

Weight of bags & soil	1436.3
Weight of soil	1418.7

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 3 620	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	224.8	15.85	15.85	84.15	
	No. 4	4.75	2.016	523.0	36.87	52.71	47.29	
	No. 8	2.37	1.474	218.2	15.38	68.10	31.90	
	No. 16	1.18	1.077	115.2	8.12	76.22	23.78	
	No. 30	0.60	0.795	94.3	6.65	82.86	17.14	
	No. 50	0.30	0.582	104.2	7.35	90.21	9.79	
	No. 100	0.15	0.426	60.0	4.23	94.44	5.56	
	No. 200	0.08	0.312	39.6	2.79	97.23	2.77	
		Pan			39.3	2.77	100.00	0.00
			Total weight	1418.6	100.00			

Operator	Joel Davenport	Weight of tear & soil	2318.5
Date	6/4/98	Weight of tear	899.9
Remarks		Weight of soil	1418.6



## Sieve Analysis

Weight of bags & soil	1439.9
Weight of soil	1422.4

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
622	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	284.4	20.00	20.00	80.00
	No. 4	4.75	2.016	518.6	36.46	56.46	43.54
	No. 8	2.37	1.474	199.4	14.02	70.48	29.52
	No. 16	1.18	1.077	95.1	6.69	77.17	22.83
	No. 30	0.60	0.795	86.6	6.09	83.26	16.74
	No. 50	0.30	0.582	101.0	7.10	90.36	9.64
	No. 100	0.15	0.426	58.7	4.13	94.49	5.51
	No. 200	0.08	0.312	41.6	2.93	97.41	2.59
	Pan			36.8	2.59	100.00	0.00
			Total weight	1422.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	2322.0
Date	6/4/98	Weight of tear	899.8
Remarks		Weight of soil	1422.2

## Sieve Analysis

Weight of bags & soil	1513.1
Weight of soil	1495.5

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 3 810	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	227.6	15.22	15.22	84.78	
	No. 4	4.75	2.016	529.8	35.43	50.65	49.35	
	No. 8	2.37	1.474	248.8	16.64	67.28	32.72	
	No. 16	1.18	1.077	133.2	8.91	76.19	23.81	
	No. 30	0.60	0.795	117.7	7.87	84.06	15.94	
	No. 50	0.30	0.582	117.5	7.86	91.92	8.08	
	No. 100	0.15	0.426	53.5	3.58	95.49	4.51	
	No. 200	0.08	0.312	42.4	2.84	98.33	1.67	
		Pan			25.0	1.67	100.00	0.00
			Total weight	1495.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	2395.3
Date	6/4/98	Weight of tear	899.9
Remarks		Weight of soil	1495.4

## Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil	1594.4
Weight of soil	1576.9

Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 3 812	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	12.0	0.76	0.76	99.24	
	3/8 inch	9.50	2.754	292.9	18.57	19.34	80.66	
	No. 4	4.75	2.016	512.9	32.53	51.86	48.14	
	No. 8	2.37	1.474	243.5	15.44	67.30	32.70	
	No. 16	1.18	1.077	131.6	8.35	75.65	24.35	
	No. 30	0.60	0.795	122.5	7.77	83.42	16.58	
	No. 50	0.30	0.582	122.2	7.75	91.17	8.83	
	No. 100	0.15	0.426	64.8	4.11	95.28	4.72	
	No. 200	0.08	0.312	42.3	2.68	97.96	2.04	
		Pan			32.2	2.04	100.00	0.00
				Total weight	1576.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2476.7
Date	6/4/98	Weight of tear	899.8
Remarks	Weight of soil 1576.9		

## Sieve Analysis

Weight of bags & soil	1584.6
Weight of soil	1567.1

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 3 814	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	7.2	0.46	0.46	99.54	
	3/8 inch	9.50	2.754	213.7	13.64	14.10	85.90	
	No. 4	4.75	2.016	544.0	34.72	48.82	51.18	
	No. 8	2.37	1.474	273.4	17.45	66.27	33.73	
	No. 16	1.18	1.077	150.8	9.63	75.90	24.10	
	No. 30	0.60	0.795	148.7	9.49	85.39	14.61	
	No. 50	0.30	0.582	113.4	7.24	92.63	7.37	
	No. 100	0.15	0.426	55.8	3.56	96.19	3.81	
	No. 200	0.08	0.312	40.4	2.58	98.77	1.23	
		Pan			19.3	1.23	100.00	0.00
				Total weight	1566.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	2466.7
Date	6/4/98	Weight of tear	899.9
Remarks		Weight of soil	1566.8

# Sieve Analysis

Weight of bags & soil	1521.8
Weight of soil	1504.2

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 3 818	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	258.9	17.21	17.21	82.79	
	No. 4	4.75	2.016	503.8	33.50	50.71	49.29	
	No. 8	2.37	1.474	252.6	16.80	67.51	32.49	
	No. 16	1.18	1.077	130.5	8.68	76.18	23.82	
	No. 30	0.60	0.795	131.8	8.76	84.95	15.05	
	No. 50	0.30	0.582	126.5	8.41	93.36	6.64	
	No. 100	0.15	0.426	49.3	3.28	96.64	3.36	
	No. 200	0.08	0.312	37.3	2.48	99.12	0.88	
		Pan			13.3	0.88	100.00	0.00
			Total weight	1504.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	2403.9
Date	6/4/98	Weight of tear	899.9
Remarks		Weight of soil	1504.0

# Sieve Analysis

Weight of bags & soil	1667.4
Weight of soil	1649.8

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 3 820	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	7.6	0.46	0.46	99.54
	3/8 inch	9.50	2.754	255.2	15.47	15.93	84.07
	No. 4	4.75	2.016	546.8	33.15	49.08	50.92
	No. 8	2.37	1.474	275.4	16.70	65.78	34.22
	No. 16	1.18	1.077	154.7	9.38	75.16	24.84
	No. 30	0.60	0.795	143.9	8.72	83.88	16.12
	No. 50	0.30	0.582	139.7	8.47	92.35	7.65
	No. 100	0.15	0.426	59.4	3.60	95.95	4.05
	No. 200	0.08	0.312	42.9	2.60	98.55	1.45
	Pan			23.9	1.45	100.00	0.00
			Total weight	1649.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2549.4
Date	6/4/98	Weight of tear	899.9
Remarks		Weight of soil	1649.5

# Site 5

4512 of Moscow South approach

# Segregation Survey

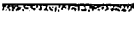

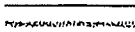
Date of Survey: Dec. 3, 1997

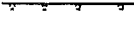

Surveyor: \_\_\_\_\_ (your name) *West of Moscow* <sup>Weather</sup> *road*  
 Control Section Number: \_\_\_\_\_ Route: *US 12* Direction: *North West*  
 Region: *Unit* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: *1* Test Site Number: *5* ADT: \_\_\_\_\_

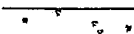

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**   

**Systematic**  

**Random**  

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

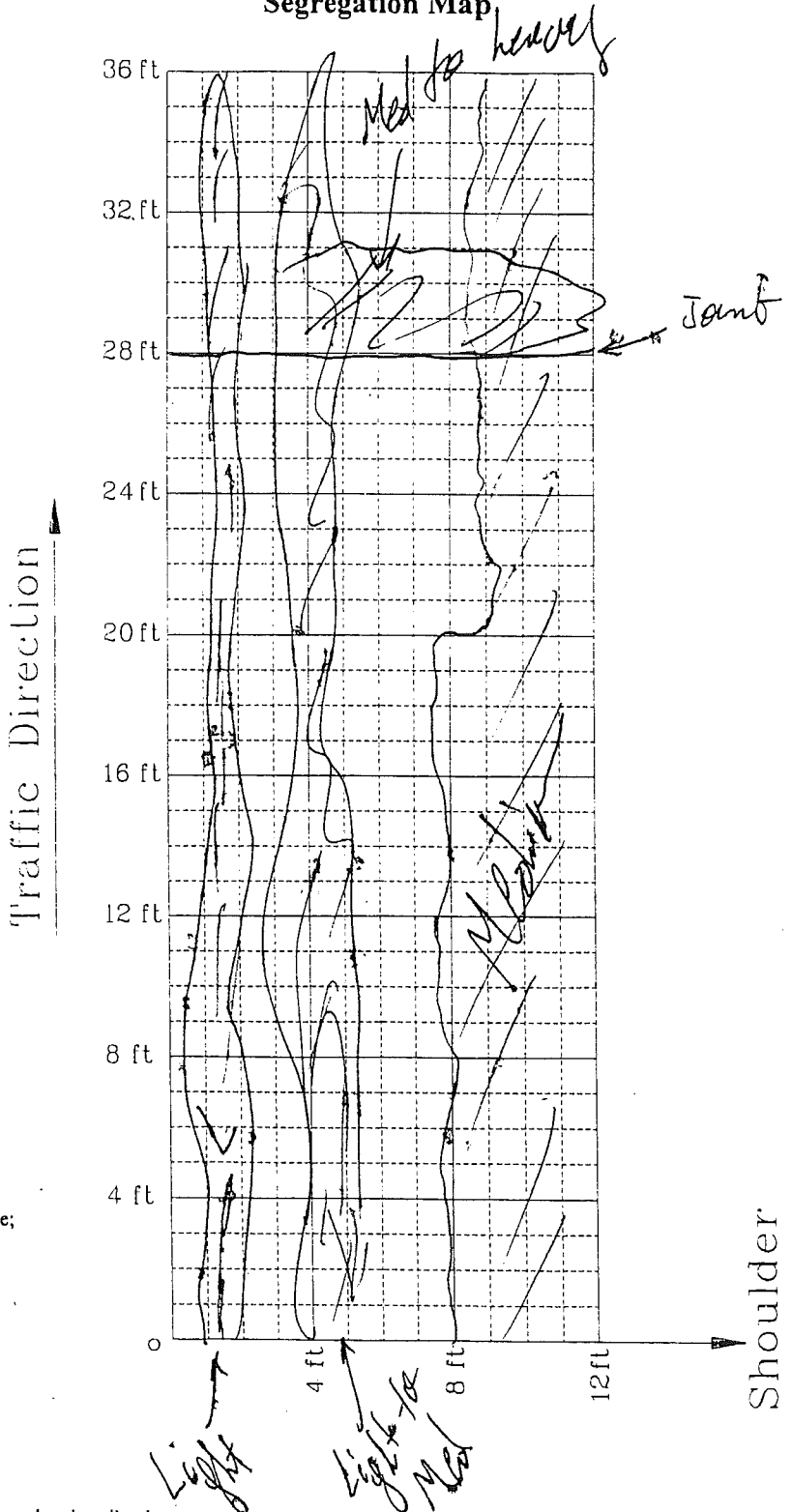
#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



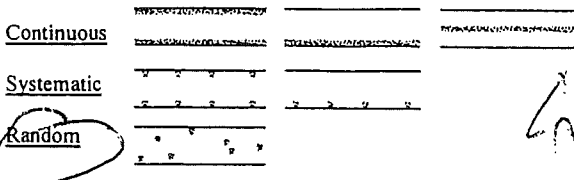
# Segregation Survey

Date of Survey: Dec. 3, 1997

Surveyor: \_\_\_\_\_ (your name) Weather: \_\_\_\_\_  
 Control Section Number: \_\_\_\_\_ Route: US 12 - Moscow Rd Direction: NORTH  
 Region: \_\_\_\_\_ Mile Post: from South Approach - right lane  
 Section Number: \_\_\_\_\_ Test Site Number: 45 ADT: \_\_\_\_\_

**Definition of Segregation:**  
 Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low  Moderate  High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low  Moderate  High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

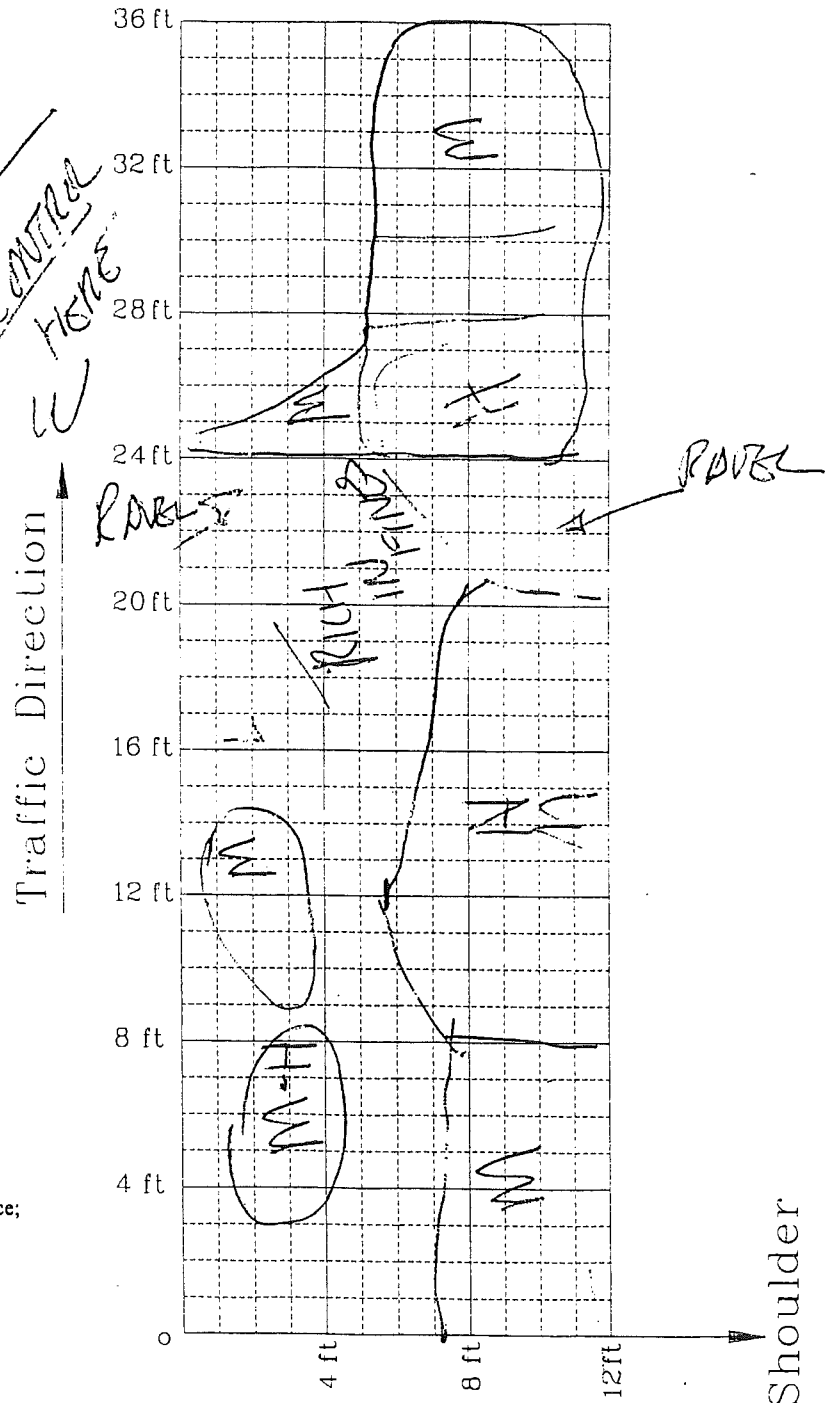
**3. Rut Depth**

**4. Flushing**

- Low  Moderate  High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: ~~12~~ Direction: ~~W.B.~~ W.B.  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 5 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

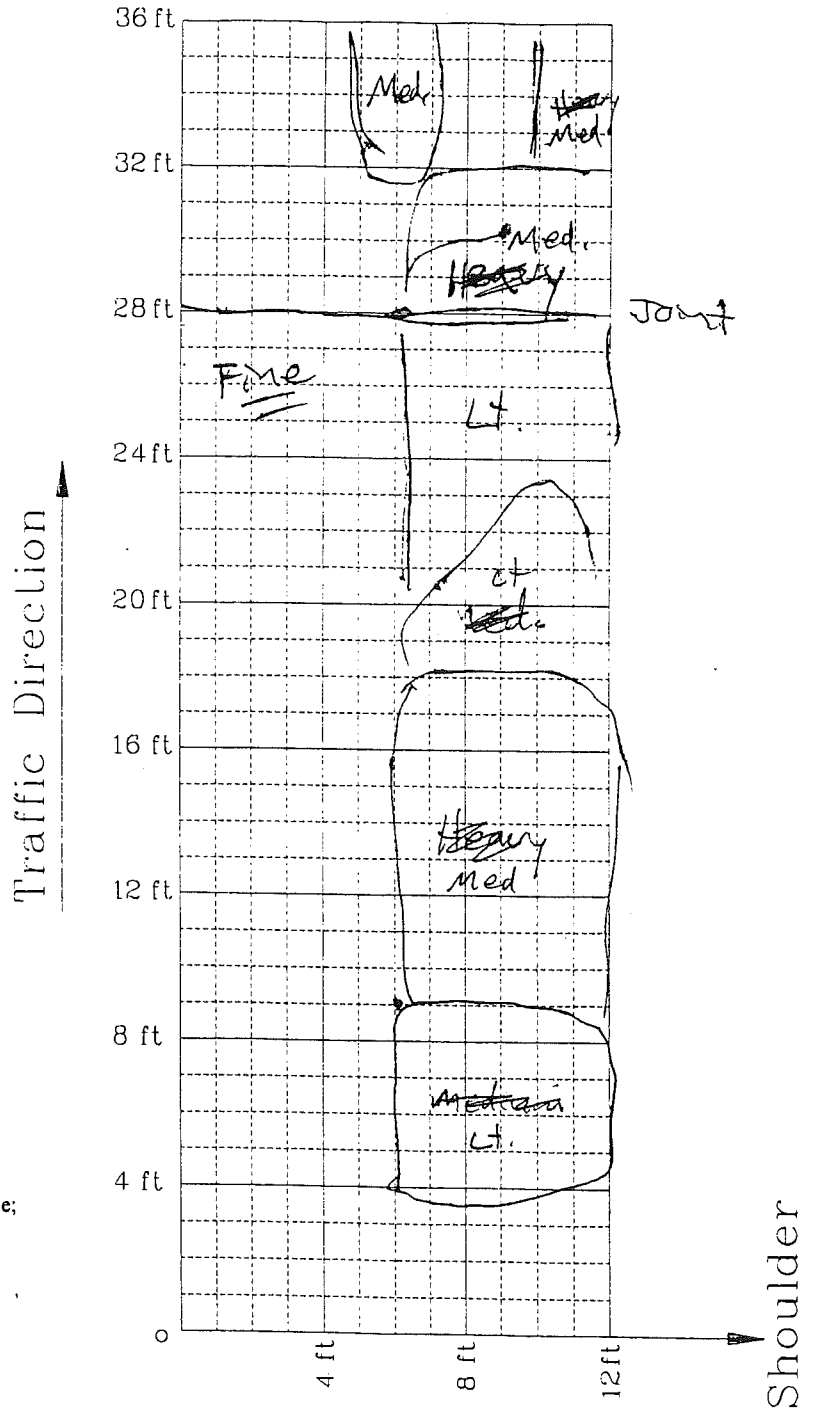
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

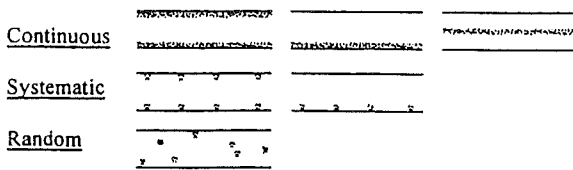
Weather:

Surveyor: \_\_\_\_\_ (your name) # Moscow Rd  
 Control Section Number: \_\_\_\_\_ Route: US-12 Direction: West  
 Region: Univ. Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 5 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

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### 2. Cracking

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

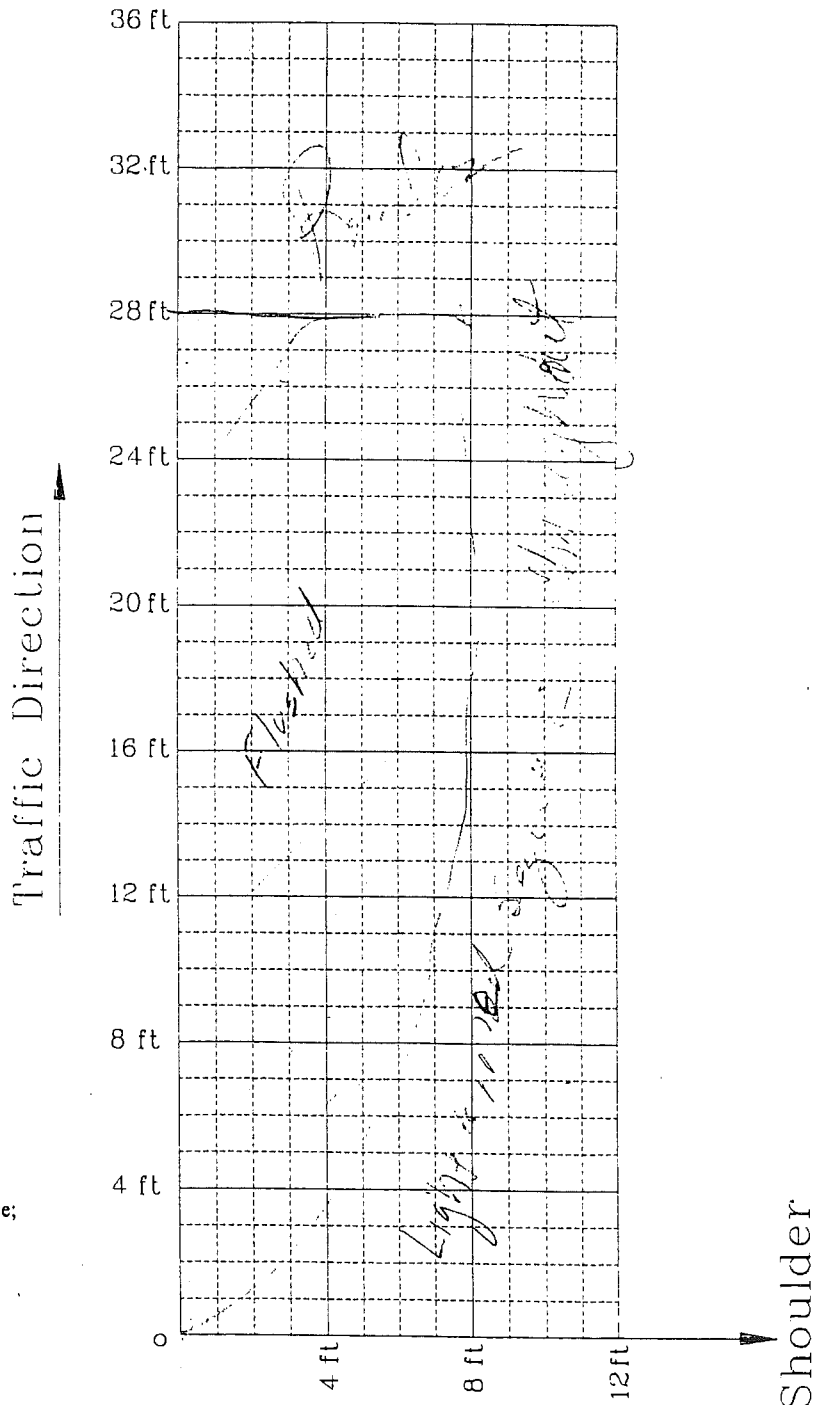
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## COMMENTS

## Segregation Map



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# Segregation Survey

Date of Survey: Dec. 3, 1997

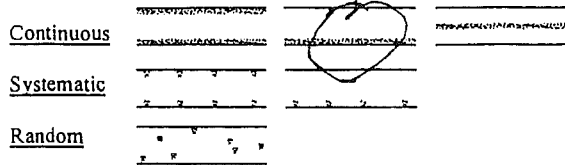
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: US-12/Moscow Direction: North West  
 Region: University Mile Post: from South to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 5 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

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### Degree of Segregation

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**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

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#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

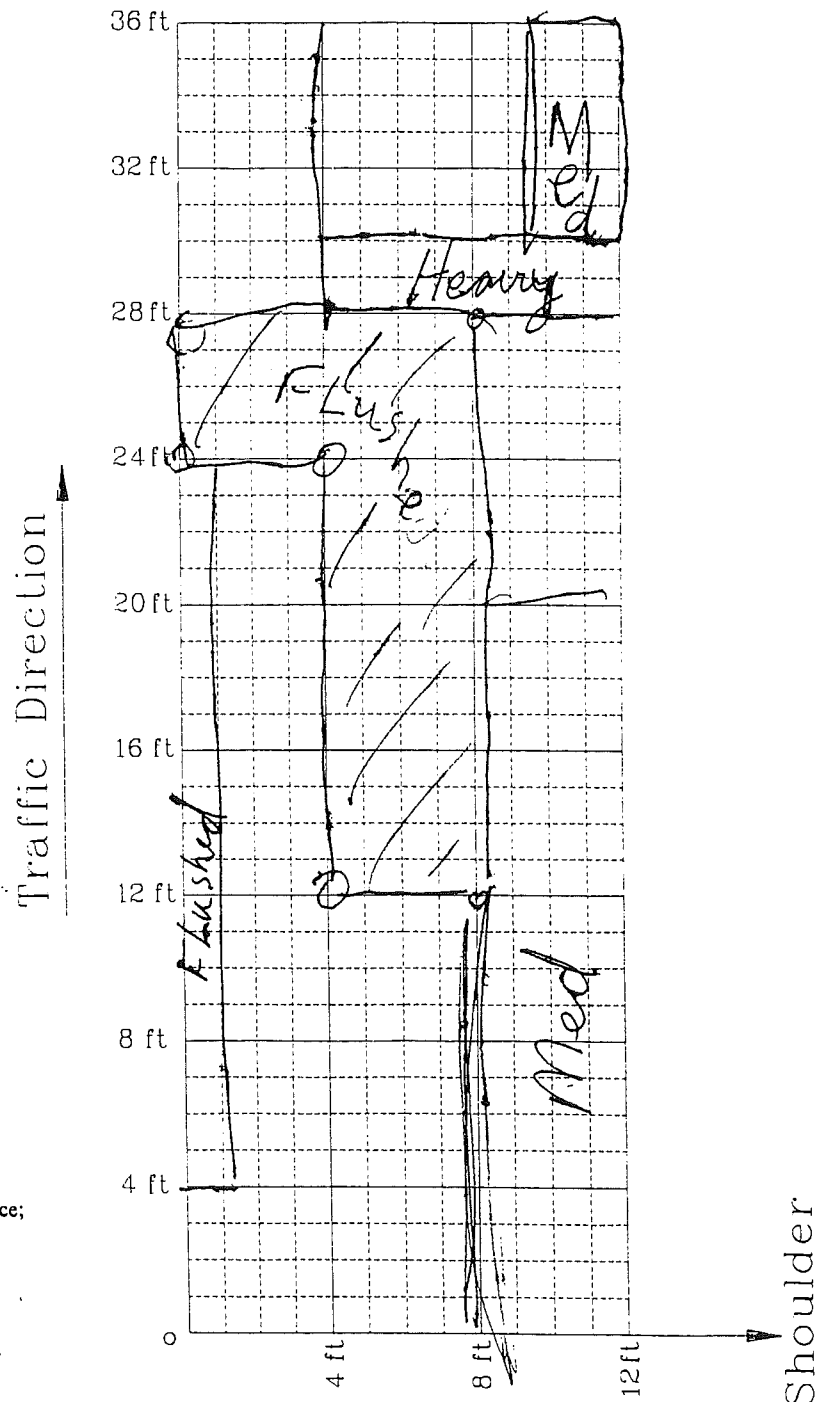
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

*Heavy, but still has fines in matrix*

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

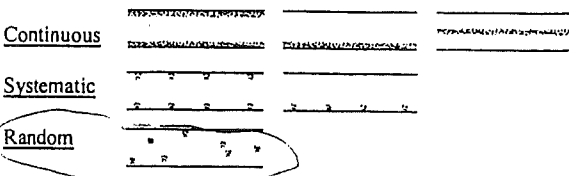
Weather: Wes

Surveyor: \_\_\_\_\_ (your name) US 12: Maxwell  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: South North  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 45 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
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**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
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**2. Cracking**

Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
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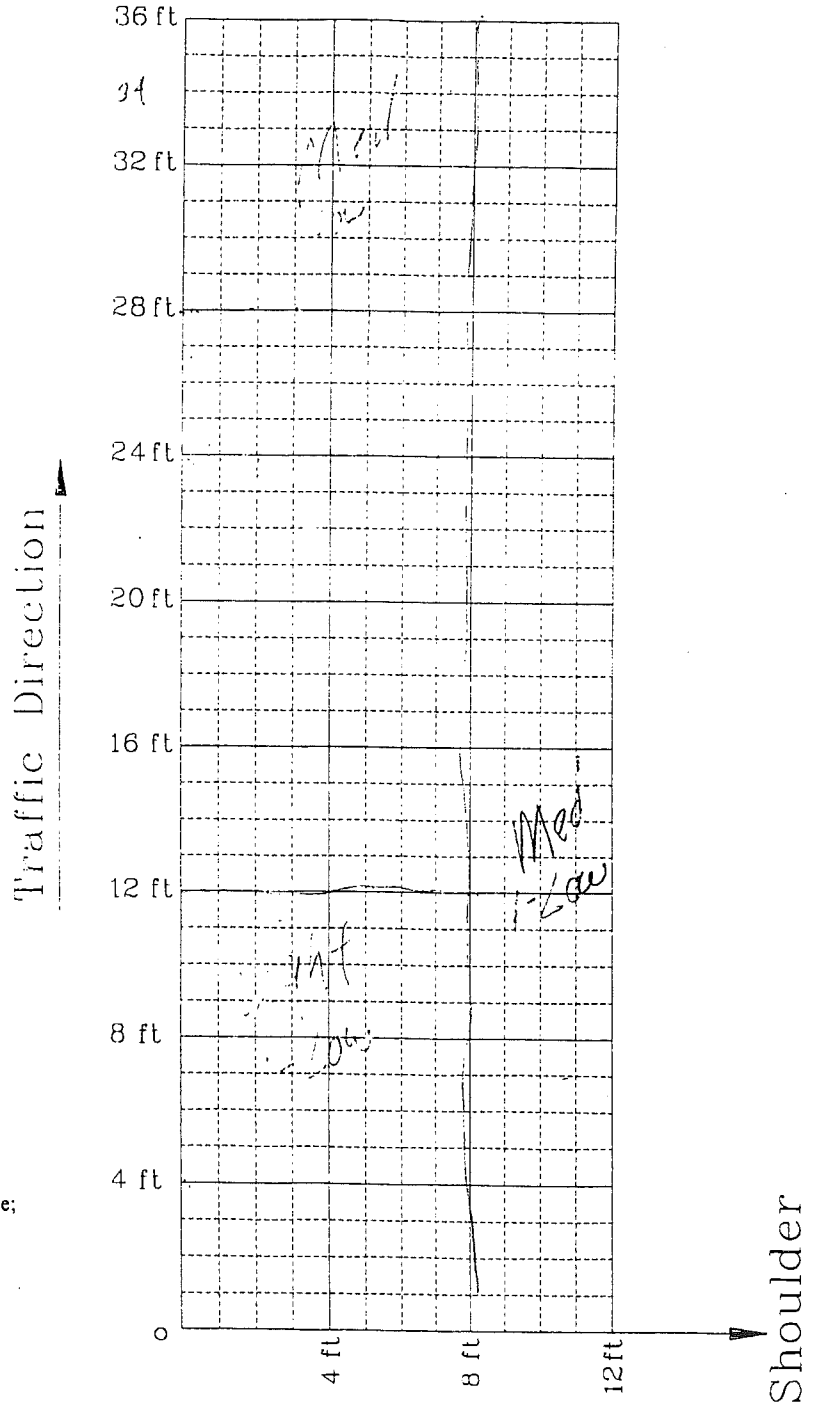
**3. Rut Depth**

**4. Flushing**

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
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**COMMENTS**

**Segregation Map**



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# Segregation Survey

Date of Survey: Dec. 3, 1997

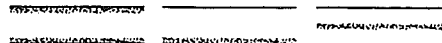
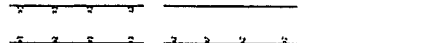

Weather: Cold, Wet, Nasty

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: US 12 / Moscow Rd Direction: NORTH  
 Region: UNIVERSITY (8) Mile Post: from ? to ?  
 Section Number: 1 Test Site Number: 5 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

**Continuous**   
**Systematic**   
**Random** 

**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
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**2. Cracking** N.A.

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**3. Rut Depth** N.A.

**4. Flushing**

Low  Moderate  High

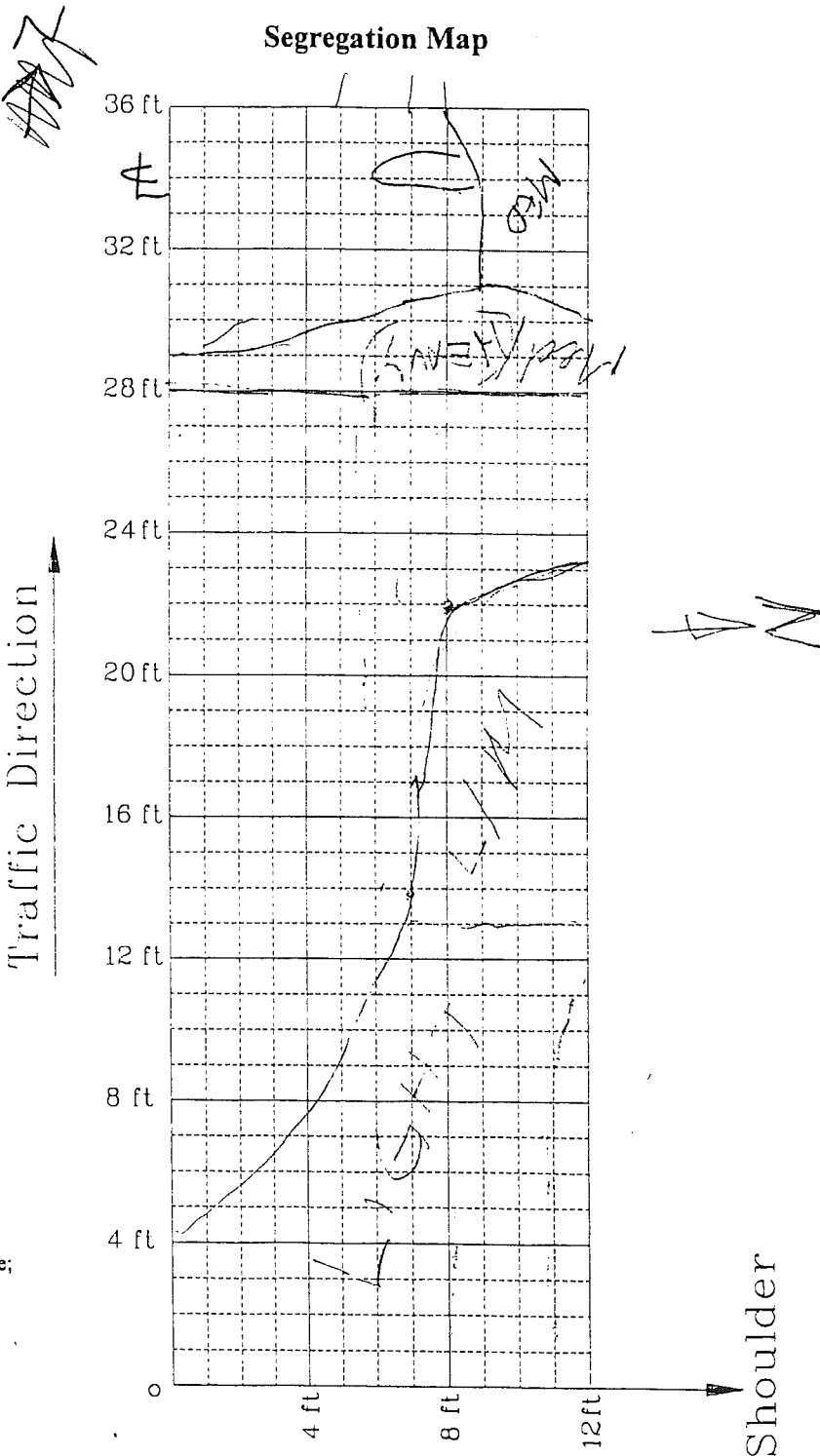
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**COMMENTS**

**Segregation Map**



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# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: 30-1 Route: US-12 Direction: WB

Region: UNIVERSITY Mile Post: from S Approach to Moscow Rd.

Section Number: \_\_\_\_\_ Test Site Number: # 5 ADT: \_\_\_\_\_

*West of*

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

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Continuous \_\_\_\_\_

Systematic \_\_\_\_\_

Random \_\_\_\_\_

## Degree of Segregation

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Low  Moderate  High

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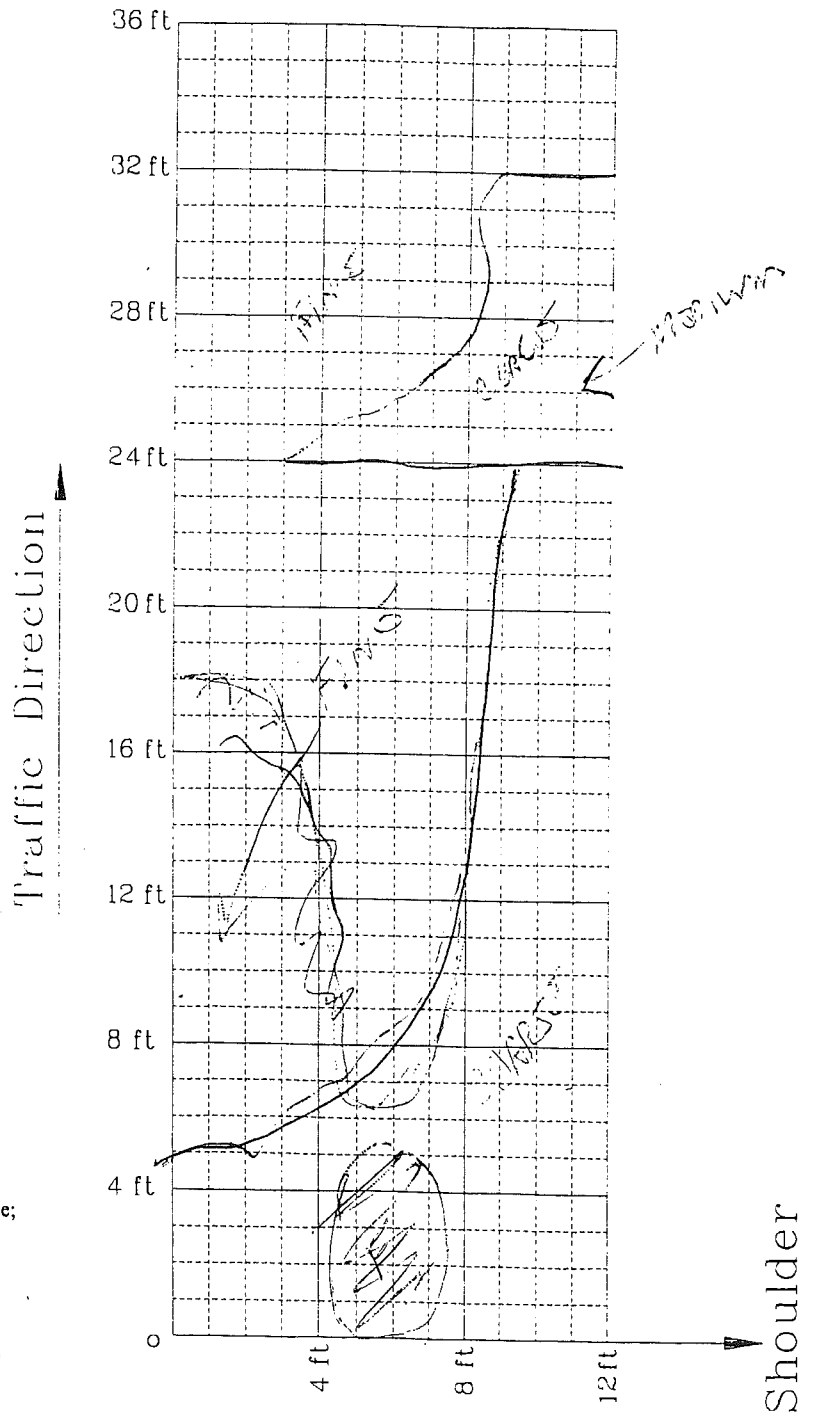
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## COMMENTS

*Not penalty*

## Segregation Map



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Overlay 1.5"

35° F

across post office

# Segregation Survey

Date of Survey: Dec. 3, 1997

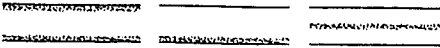
Weather:

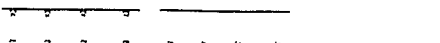
Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: US 12 approach Direction: North  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ / \_\_\_\_\_ Test Site Number: 45 ADT: \_\_\_\_\_


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**Systematic** 

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#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

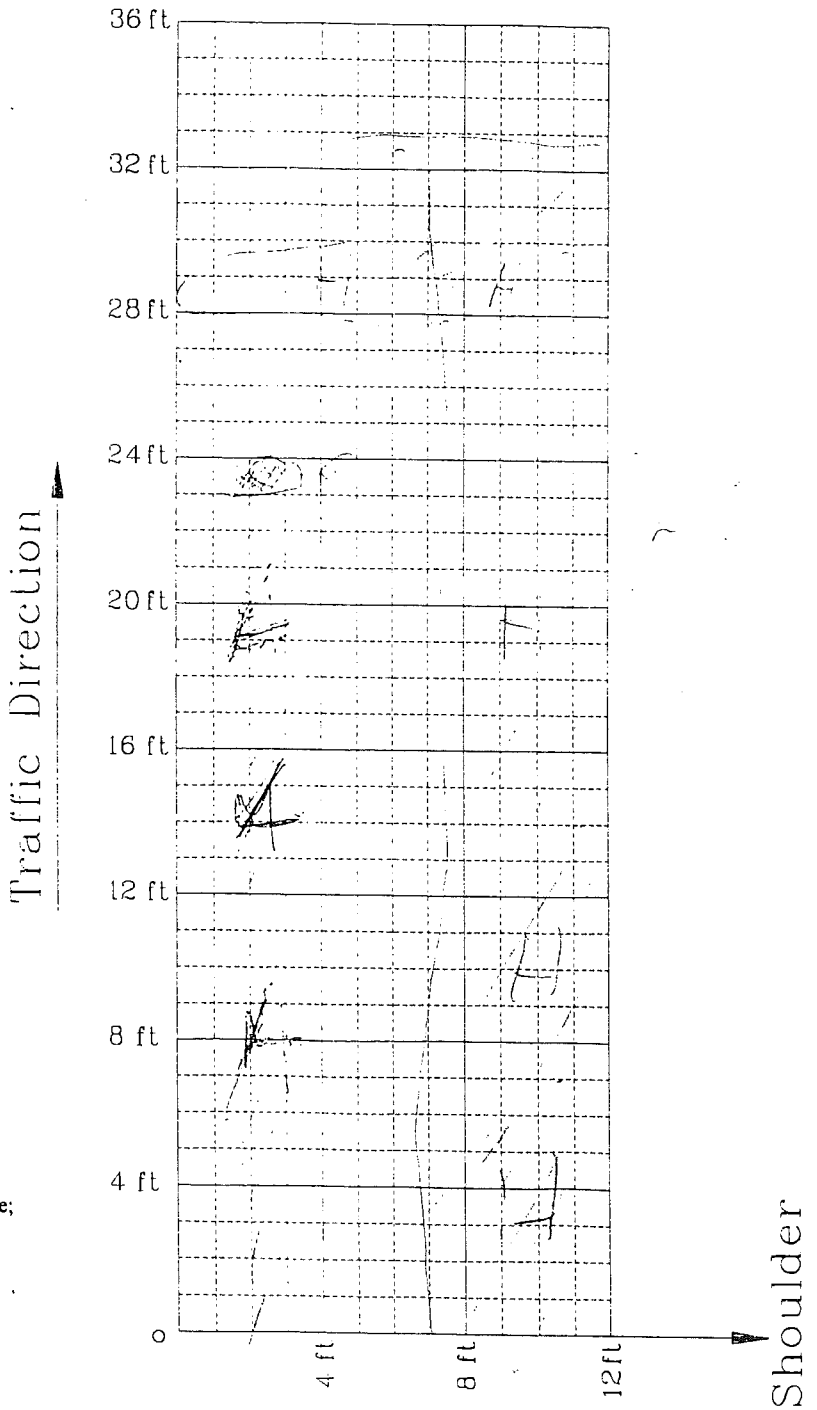
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## Nuclear Density Sampling Data (Jan. 30, 1998)

### SITE 5 US-12 W. Bound (west of Moscow road), Hillsdale County

Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2847
	Moisture	673

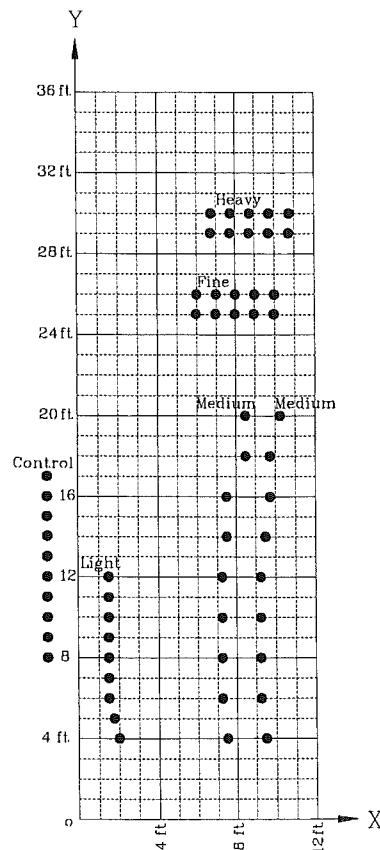
Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

<b>Sample 1</b>		mean	143.3						
<b>Heavy</b>		std	1.71						
<b>0730</b>	144.3	<b>0830</b>	143.3	<b>0930</b>	142.7	<b>1030</b>	144.0	<b>1130</b>	141.8
<b>0729</b>	140.6	<b>0829</b>	142.3	<b>0929</b>	143.8	<b>1029</b>	147.0	<b>1129</b>	143.2

<b>Sample 2</b>		mean	146.4						
<b>Fine</b>		std	1.51						
<b>0626</b>	146.9	<b>0726</b>	144.8	<b>0826</b>	149.1	<b>0926</b>	146.0	<b>1026</b>	143.9
<b>0625</b>	147.2	<b>0725</b>	146.2	<b>0825</b>	147.9	<b>0925</b>	146.4	<b>1025</b>	145.3

Sample 3		Sample 4		Sample 5	
Light		Medium		Medium	
<b>0212</b>	141.2	<b>0820</b>	140.6	<b>1020</b>	137.4
<b>0211</b>	141.5	<b>0818</b>	141.2	<b>1018</b>	137.1
<b>0210</b>	140.6	<b>0716</b>	140.0	<b>1016</b>	136.3
<b>0209</b>	141.7	<b>0714</b>	139.8	<b>0914</b>	138.3
<b>0208</b>	141.1	<b>0712</b>	142.9	<b>0912</b>	138.0
<b>0207</b>	135.8	<b>0710</b>	143.1	<b>0910</b>	138.2
<b>0206</b>	141.6	<b>0708</b>	137.6	<b>0908</b>	137.1
<b>0205</b>	142.1	<b>0706</b>	140.2	<b>0906</b>	139.2
<b>0204</b>	140.2	<b>0704</b>	140.0	<b>0904</b>	139.3
mean	140.6	mean	140.6	mean	137.9
std	1.91	std	1.67	std	1.00

<b>Control</b>	
<b>Outside</b>	
Control 10	141.7
Control 9	141.2
Control 8	142.7
Control 7	140.7
Control 6	143.2
Control 5	141.1
Control 4	142.6
Control 3	141.2
Control 2	140.0
Control 1	141.4
mean	141.6
std	0.99



## Nuclear Density Sampling Data (April 14)

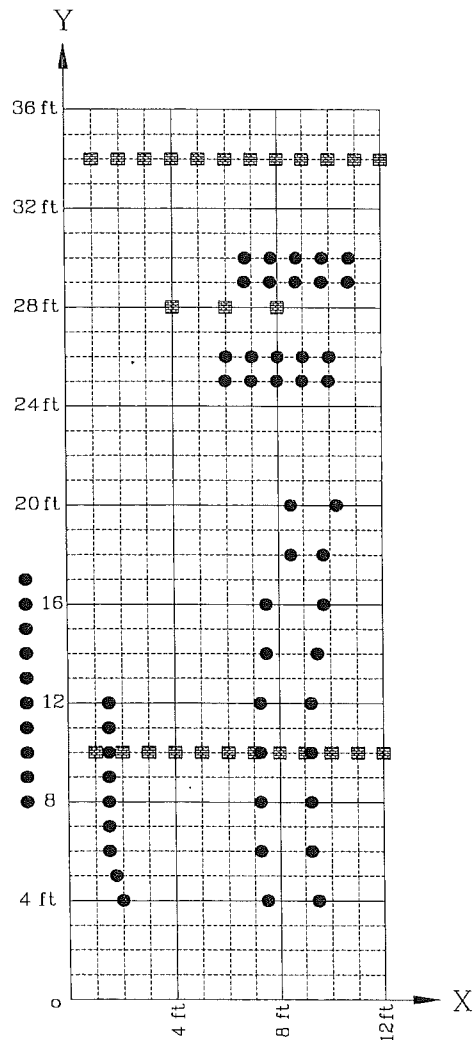
### SITE 5 US-12 W. Bound (west of Moscow road), Hillsdale County

Chart Standard	Density	2863
	Moisture	652
Operating Standard	Density	2889
	Moisture	664

Gauge No.	101953
Model	Troxler 3440
Inspector	Mike Mullikin

Transverse		Transverse	
<b>0134</b>	137.2	<b>0110</b>	145.0
<b>0234</b>	141.2	<b>0210</b>	142.1
<b>0334</b>	145.5	<b>0310</b>	142.1
<b>0434</b>	147.9	<b>0410</b>	146.6
<b>0534</b>	148.9	<b>0510</b>	140.8
<b>0634</b>	146.7	<b>0610</b>	142.5
<b>0734</b>	147.6	<b>0710</b>	146.6
<b>0834</b>	147.6	<b>0810</b>	145.7
<b>0934</b>	149.3	<b>0910</b>	146.4
<b>1034</b>	147.1	<b>1010</b>	153.8
<b>1134</b>	148.7	<b>1110</b>	143.3
<b>1234</b>	139.9	<b>1210</b>	144.9
mean	145.6	mean	145.0
std	3.97	std	3.42

Joint	
<b>0428</b>	144.7
<b>0628</b>	150.6
<b>0828</b>	144.3
mean	146.5
std	3.53







Date 6/9/98 Highway \_\_\_\_\_  
 Tested By Joel Davenport Site Site 5  
 Checked By \_\_\_\_\_  
 Remarks \_\_\_\_\_

1	2	3	4	5	6	7	8	9	10
Specimen Number	Course Description	Weight in air (g)	SSD Weight (g)	Weight in water (g)	Volume (SSD) [4-5](cm <sup>3</sup> )	Volume (air) [3-5](cm <sup>3</sup> )	Specific Gravity SSD [4/6]	Specific Gravity air [3/7]	Remarks
704		1864.4	1887.1	1042.3	844.8	822.1	2.234	2.268	
708		1741.2	1760.1	980.5	779.6	760.7	2.258	2.289	
904		1876.1	1892.4	1054.4	838.0	821.7	2.258	2.283	
906		1693.3	1731.0	959.8	771.2	733.5	2.245	2.309	
908		1532.1	1561.4	870.8	690.6	661.3	2.261	2.317	
910		1529.1	1556.4	862.8	693.6	666.3	2.244	2.295	
912		1374.2	1393.0	766.1	626.9	608.1	2.222	2.260	
914		1353.8	1369.4	766.1	603.3	587.7	2.270	2.304	
	6/10/98								
625		1830.0	1831.5	1056.7	774.8	773.3	2.364	2.366	
725		1731.0	1734.3	994.8	739.5	736.2	2.345	2.351	
729		1439.4	1443.9	814.0	629.9	625.4	2.292	2.302	
828 (Joint)		1796.2	1798.4	1042.3	756.1	753.9	2.379	2.383	
925		1732.3	1733.7	1008.4	725.3	723.9	2.390	2.393	
926		1658.5	1659.6	967.7	691.9	690.8	2.399	2.401	
929		1717.5	1719.6	988.6	731.0	728.9	2.352	2.356	
Control 10		1658.3	1664.4	938.0	726.4	720.3	2.291	2.302	

## Sieve Analysis

Weight of bags & soil	1683.4
Weight of soil	1665.7
	Weight of empty bags
	17.7

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
Control 4	1/2 inch	12.50	3.116	12.6	0.76	0.76	99.24
	3/8 inch	9.50	2.754	251.5	15.10	15.86	84.14
	No. 4	4.75	2.016	569.7	34.21	50.07	49.93
	No. 8	2.37	1.474	261.6	15.71	65.77	34.23
	No. 16	1.18	1.077	203.0	12.19	77.96	22.04
	No. 30	0.60	0.795	135.6	8.14	86.11	13.89
	No. 50	0.30	0.582	109.8	6.59	92.70	7.30
	No. 100	0.15	0.426	54.5	3.27	95.97	4.03
	No. 200	0.08	0.312	38.1	2.29	98.26	1.74
		Pan			29.0	1.74	100.00
			Total weight	1665.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	2565.2
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1665.3

## Sieve Analysis

Weight of bags & soil	1575.4
Weight of soil	1557.8
Weight of empty bags	17.6

Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 Control 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	5.5	0.35	0.35	99.65	
	3/8 inch	9.50	2.754	208.8	13.40	13.76	86.24	
	No. 4	4.75	2.016	524.7	33.68	47.44	52.56	
	No. 8	2.37	1.474	270.1	17.34	64.78	35.22	
	No. 16	1.18	1.077	156.9	10.07	74.85	25.15	
	No. 30	0.60	0.795	127.1	8.16	83.01	16.99	
	No. 50	0.30	0.582	120.8	7.75	90.76	9.24	
	No. 100	0.15	0.426	64.8	4.16	94.92	5.08	
	No. 200	0.08	0.312	40.3	2.59	97.51	2.49	
	Pan			38.8	2.49	100.00	0.00	
				Total weight	1557.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2457.7
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1557.8

# Sieve Analysis

Weight of bags & soil	1549.6
Weight of soil	1532.1

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 Control 8	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	183.5	11.98	11.98	88.02	
	No. 4	4.75	2.016	575.9	37.60	49.58	50.42	
	No. 8	2.37	1.474	275.3	17.97	67.55	32.45	
	No. 16	1.18	1.077	147.4	9.62	77.17	22.83	
	No. 30	0.60	0.795	114.4	7.47	84.64	15.36	
	No. 50	0.30	0.582	103.3	6.74	91.38	8.62	
	No. 100	0.15	0.426	58.8	3.84	95.22	4.78	
	No. 200	0.08	0.312	37.7	2.46	97.68	2.32	
		Pan			35.5	2.32	100.00	0.00
			Total weight	1531.8	100.00			

Operator	Joel Davenport	Weight of tear & soil	2431.7
Date	6/24/98	Weight of tear	899.9
Remarks		Weight of soil	1531.8



# Sieve Analysis

Weight of bags & soil	1517.5
Weight of soil	1500.0

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 Control 9	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	4.1	0.27	0.27	99.73
	3/8 inch	9.50	2.754	211.0	14.07	14.34	85.66
	No. 4	4.75	2.016	553.1	36.87	51.21	48.79
	No. 8	2.37	1.474	237.8	15.85	67.07	32.93
	No. 16	1.18	1.077	172.3	11.49	78.55	21.45
	No. 30	0.60	0.795	116.2	7.75	86.30	13.70
	No. 50	0.30	0.582	98.9	6.59	92.89	7.11
	No. 100	0.15	0.426	49.0	3.27	96.16	3.84
	No. 200	0.08	0.312	31.8	2.12	98.28	1.72
		Pan			25.8	1.72	100.00
			Total weight	1500.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2399.9
Date	6/24/98	Weight of tear	899.9
Remarks		Weight of soil	1500.0

## Sieve Analysis

Weight of bags & soil	1559.8
Weight of soil	1542.1
Weight of empty bags	
17.7	

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
Control 10	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	225.2	14.61	14.61	85.39
	No. 4	4.75	2.016	524.4	34.01	48.62	51.38
	No. 8	2.37	1.474	276.2	17.91	66.53	33.47
	No. 16	1.18	1.077	202.6	13.14	79.67	20.33
	No. 30	0.60	0.795	120.2	7.80	87.47	12.53
	No. 50	0.30	0.582	107.8	6.99	94.46	5.54
	No. 100	0.15	0.426	41.8	2.71	97.17	2.83
	No. 200	0.08	0.312	31.9	2.07	99.24	0.76
		Pan			11.7	0.76	100.00
			Total weight	1541.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2441.7
Date	6/24/98	Weight of tear	899.9
Remarks		Weight of soil	1541.8

## Sieve Analysis

Weight of bags & soil	1997.6
Weight of soil	1979.9

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 204	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	10.6	0.54	0.54	99.46
	3/8 inch	9.50	2.754	274.2	13.85	14.39	85.61
	No. 4	4.75	2.016	692.3	34.98	49.37	50.63
	No. 8	2.37	1.474	311.8	15.75	65.12	34.88
	No. 16	1.18	1.077	233.7	11.81	76.93	23.07
	No. 30	0.60	0.795	174.2	8.80	85.73	14.27
	No. 50	0.30	0.582	132.1	6.67	92.40	7.60
	No. 100	0.15	0.426	74.0	3.74	96.14	3.86
	No. 200	0.08	0.312	53.2	2.69	98.83	1.17
		Pan			23.2	1.17	100.00
			Total weight	1979.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2879.2
Date	6/23/98	Weight of tear	899.8
Remarks		Weight of soil	1979.4

## Sieve Analysis

Weight of bags & soil	1935.0
Weight of soil	1917.3

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 205	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	11.3	0.59	0.59	99.41	
	3/8 inch	9.50	2.754	282.0	14.71	15.30	84.70	
	No. 4	4.75	2.016	619.8	32.33	47.62	52.38	
	No. 8	2.37	1.474	329.3	17.18	64.80	35.20	
	No. 16	1.18	1.077	255.2	13.31	78.11	21.89	
	No. 30	0.60	0.795	159.8	8.33	86.44	13.56	
	No. 50	0.30	0.582	142.4	7.43	93.87	6.13	
	No. 100	0.15	0.426	58.0	3.03	96.90	3.10	
	No. 200	0.08	0.312	42.3	2.21	99.10	0.90	
		Pan			17.2	0.90	100.00	0.00
			Total weight	1917.30	100.00			

Operator	Joel Davenport	Weight of tear & soil	2817.2
Date	6/10/98	Weight of tear	899.9
Remarks		Weight of soil	1917.3

## Sieve Analysis

Weight of empty bags      17.7

Weight of bags & soil      1998.7  
Weight of soil      1981.0

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
206	1/2 inch	12.50	3.116	5.3	0.27	0.27	99.73
	3/8 inch	9.50	2.754	261.9	13.22	13.49	86.51
	No. 4	4.75	2.016	622.9	31.45	44.94	55.06
	No. 8	2.37	1.474	352.7	17.81	62.74	37.26
	No. 16	1.18	1.077	247.3	12.48	75.23	24.77
	No. 30	0.60	0.795	180.8	9.13	84.35	15.65
	No. 50	0.30	0.582	157.7	7.96	92.32	7.68
	No. 100	0.15	0.426	70.3	3.55	95.87	4.13
	No. 200	0.08	0.312	45.1	2.28	98.14	1.86
	Pan			36.8	1.86	100.00	0.00
			Total weight	1980.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2880.7
Date	6/23/98	Weight of tear	899.8
Remarks		Weight of soil	1980.9

## Sieve Analysis

Weight of bags & soil	1973.2
Weight of soil	1955.7

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 5 209	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	264.1	13.50	13.50	86.50
	No. 4	4.75	2.016	635.5	32.49	46.00	54.00
	No. 8	2.37	1.474	357.0	18.25	64.25	35.75
	No. 16	1.18	1.077	222.3	11.37	75.62	24.38
	No. 30	0.60	0.795	183.5	9.38	85.00	15.00
	No. 50	0.30	0.582	133.2	6.81	91.81	8.19
	No. 100	0.15	0.426	75.8	3.88	95.69	4.31
	No. 200	0.08	0.312	48.6	2.49	98.17	1.83
		Pan			35.7	1.83	100.00
			Total	1955.7	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2855.6
Date	6/10/98	Weight of tear	899.9
Remarks		Weight of soil	1955.7

## Sieve Analysis

Weight of bags & soil	1915.5
Weight of soil	1897.9

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 210	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	9.8	0.52	0.52	99.48	
	3/8 inch	9.50	2.754	264.8	13.95	14.47	85.53	
	No. 4	4.75	2.016	624.5	32.90	47.37	52.63	
	No. 8	2.37	1.474	336.9	17.75	65.12	34.88	
	No. 16	1.18	1.077	237.0	12.49	77.61	22.39	
	No. 30	0.60	0.795	189.9	10.01	87.62	12.38	
	No. 50	0.30	0.582	117.2	6.18	93.79	6.21	
	No. 100	0.15	0.426	60.3	3.18	96.97	3.03	
	No. 200	0.08	0.312	40.2	2.12	99.09	0.91	
		Pan			17.3	0.91	100.00	0.00
			Total	1897.9	100.00			
			weight					

Operator	Joel Davenport	Weight of tear & soil	2797.8
Date	6/10/98	Weight of tear	899.9
Remarks		Weight of soil	1897.9

## Sieve Analysis

Weight of bags & soil	1854.0
Weight of soil	1836.3

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
211	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	258.2	14.06	14.06	85.94
	No. 4	4.75	2.016	625.7	34.07	48.13	51.87
	No. 8	2.37	1.474	293.8	16.00	64.13	35.87
	No. 16	1.18	1.077	210.4	11.46	75.59	24.41
	No. 30	0.60	0.795	177.2	9.65	85.24	14.76
	No. 50	0.30	0.582	140.6	7.66	92.90	7.10
	No. 100	0.15	0.426	61.4	3.34	96.24	3.76
	No. 200	0.08	0.312	41.7	2.27	98.51	1.49
	Pan			27.3	1.49	100.00	0.00
			Total weight	1836.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2736.1
Date	6/10/98	Weight of tear	899.9
Remarks		Weight of soil	1836.2



## Sieve Analysis

Weight of bags & soil	1831.6
Weight of soil	1814.0

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
428	1/2 inch	12.50	3.116	4.0	0.22	0.22	99.78
(Joint)	3/8 inch	9.50	2.754	263.1	14.51	14.73	85.27
	No. 4	4.75	2.016	611.4	33.71	48.44	51.56
	No. 8	2.37	1.474	303.5	16.73	65.17	34.83
	No. 16	1.18	1.077	208.1	11.47	76.65	23.35
	No. 30	0.60	0.795	150.7	8.31	84.96	15.04
	No. 50	0.30	0.582	117.2	6.46	91.42	8.58
	No. 100	0.15	0.426	72.8	4.01	95.43	4.57
	No. 200	0.08	0.312	45.6	2.51	97.95	2.05
	Pan			37.2	2.05	100.00	0.00
			Total weight	1813.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2713.5
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1813.6

## Sieve Analysis

Weight of bags & soil	1713.8
Weight of soil	1696.2

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 5 625	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	198.4	11.70	11.70	88.30	
	No. 4	4.75	2.016	589.9	34.78	46.48	53.52	
	No. 8	2.37	1.474	298.2	17.58	64.06	35.94	
	No. 16	1.18	1.077	208.5	12.29	76.36	23.64	
	No. 30	0.60	0.795	148.6	8.76	85.12	14.88	
	No. 50	0.30	0.582	123.6	7.29	92.41	7.59	
	No. 100	0.15	0.426	66.9	3.94	96.35	3.65	
	No. 200	0.08	0.312	44.0	2.59	98.94	1.06	
		Pan			17.9	1.06	100.00	0.00
			Total weight	1696.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	2595.9
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1696.0

## Sieve Analysis

Weight of bags & soil	1750.6
Weight of soil	1732.9

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 628 (Joint)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	3.4	0.20	0.20	99.80
	3/8 inch	9.50	2.754	188.2	10.86	11.06	88.94
	No. 4	4.75	2.016	533.2	30.78	41.84	58.16
	No. 8	2.37	1.474	357.1	20.61	62.45	37.55
	No. 16	1.18	1.077	211.0	12.18	74.63	25.37
	No. 30	0.60	0.795	142.0	8.20	82.82	17.18
	No. 50	0.30	0.582	127.7	7.37	90.19	9.81
	No. 100	0.15	0.426	73.2	4.23	94.42	5.58
	No. 200	0.08	0.312	52.8	3.05	97.47	2.53
		Pan			43.9	2.53	100.00
			Total weight	1732.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2632.4
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1732.5

## Sieve Analysis

Weight of bags & soil	1758.7
Weight of soil	1741.2
Weight of empty bags	17.5

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 704	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	6.7	0.38	0.38	99.62
	3/8 inch	9.50	2.754	301.1	17.30	17.68	82.32
	No. 4	4.75	2.016	610.0	35.04	52.72	47.28
	No. 8	2.37	1.474	271.5	15.60	68.32	31.68
	No. 16	1.18	1.077	171.2	9.83	78.15	21.85
	No. 30	0.60	0.795	133.9	7.69	85.84	14.16
	No. 50	0.30	0.582	120.0	6.89	92.73	7.27
	No. 100	0.15	0.426	57.9	3.33	96.06	3.94
	No. 200	0.08	0.312	36.7	2.11	98.17	1.83
				Total weight	1740.9	100.00	100.00

Operator	Joel Davenport	Weight of tear & soil	2640.7
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1740.8

## Sieve Analysis

Weight of bags & soil	1743.5
Weight of soil	1725.9

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 706	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	4.2	0.24	0.24	99.76	
	3/8 inch	9.50	2.754	335.2	19.43	19.67	80.33	
	No. 4	4.75	2.016	596.4	34.56	54.23	45.77	
	No. 8	2.37	1.474	248.9	14.42	68.66	31.34	
	No. 16	1.18	1.077	164.6	9.54	78.20	21.80	
	No. 30	0.60	0.795	120.7	7.00	85.19	14.81	
	No. 50	0.30	0.582	134.6	7.80	92.99	7.01	
	No. 100	0.15	0.426	55.3	3.20	96.20	3.80	
	No. 200	0.08	0.312	40.7	2.36	98.56	1.44	
		Pan			24.9	1.44	100.00	0.00
				Total weight	1725.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2625.3
Date	6/23/98	Weight of tear	899.8
Remarks		Weight of soil	1725.5

## Sieve Analysis

Weight of bags & soil	1644.0
Weight of soil	1626.5

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 708	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	5.8	0.36	0.36	99.64
	3/8 inch	9.50	2.754	322.7	19.84	20.20	79.80
	No. 4	4.75	2.016	574.1	35.30	55.50	44.50
	No. 8	2.37	1.474	217.9	13.40	68.90	31.10
	No. 16	1.18	1.077	143.4	8.82	77.72	22.28
	No. 30	0.60	0.795	120.2	7.39	85.11	14.89
	No. 50	0.30	0.582	102.8	6.32	91.43	8.57
	No. 100	0.15	0.426	63.3	3.89	95.32	4.68
	No. 200	0.08	0.312	46.4	2.85	98.17	1.83
		Pan			29.7	1.83	100.00
			Total weight	1626.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2526.2
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1626.3

## Sieve Analysis

Weight of bags & soil	1573.7
Weight of soil	1556.1

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 710	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	9.4	0.60	0.60	99.40	
	3/8 inch	9.50	2.754	248.7	15.98	16.59	83.41	
	No. 4	4.75	2.016	476.7	30.63	47.22	52.78	
	No. 8	2.37	1.474	284.4	18.28	65.50	34.50	
	No. 16	1.18	1.077	187.2	12.03	77.53	22.47	
	No. 30	0.60	0.795	152.8	9.82	87.35	12.65	
	No. 50	0.30	0.582	103.9	6.68	94.02	5.98	
	No. 100	0.15	0.426	47.3	3.04	97.06	2.94	
	No. 200	0.08	0.312	32.6	2.09	99.16	0.84	
		Pan			13.1	0.84	100.00	0.00
				Total weight	1556.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	2456.0
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1556.1

## Sieve Analysis

Weight of bags & soil	1451.6
Weight of soil	1434.0

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 5 712	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	8.7	0.61	0.61	99.39	
	3/8 inch	9.50	2.754	183.7	12.81	13.42	86.58	
	No. 4	4.75	2.016	488.4	34.06	47.48	52.52	
	No. 8	2.37	1.474	264.1	18.42	65.89	34.11	
	No. 16	1.18	1.077	160.9	11.22	77.11	22.89	
	No. 30	0.60	0.795	137.0	9.55	86.67	13.33	
	No. 50	0.30	0.582	101.1	7.05	93.72	6.28	
	No. 100	0.15	0.426	44.9	3.13	96.85	3.15	
	No. 200	0.08	0.312	31.5	2.20	99.04	0.96	
		Pan			13.7	0.96	100.00	0.00
			Total weight	1434.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	2333.9
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1434.0



# Sieve Analysis

Weight of bags & soil	1397.0
Weight of soil	1379.5

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 714	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	12.2	0.88	0.88	99.12	
	3/8 inch	9.50	2.754	271.6	19.69	20.57	79.43	
	No. 4	4.75	2.016	474.2	34.37	54.95	45.05	
	No. 8	2.37	1.474	189.6	13.74	68.69	31.31	
	No. 16	1.18	1.077	114.5	8.30	76.99	23.01	
	No. 30	0.60	0.795	106.1	7.69	84.68	15.32	
	No. 50	0.30	0.582	103.9	7.53	92.21	7.79	
	No. 100	0.15	0.426	50.8	3.68	95.90	4.10	
	No. 200	0.08	0.312	31.6	2.29	98.19	1.81	
		Pan			25.0	1.81	100.00	0.00
			Total weight	1379.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	2279.4
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1379.5

## Sieve Analysis

Weight of bags & soil	1632.2
Weight of soil	1614.6

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 725	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	6.6	0.41	0.41	99.59
	3/8 inch	9.50	2.754	305.3	18.91	19.32	80.68
	No. 4	4.75	2.016	559.7	34.67	53.99	46.01
	No. 8	2.37	1.474	224.0	13.87	67.86	32.14
	No. 16	1.18	1.077	146.4	9.07	76.93	23.07
	No. 30	0.60	0.795	127.4	7.89	84.82	15.18
	No. 50	0.30	0.582	106.1	6.57	91.39	8.61
	No. 100	0.15	0.426	61.9	3.83	95.22	4.78
	No. 200	0.08	0.312	42.6	2.64	97.86	2.14
		Pan			34.5	2.14	100.00
			Total weight	1614.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2514.3
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1614.4

## Sieve Analysis

Weight of bags & soil	1351.0
Weight of soil	1533.4
Weight of empty bags	17.6

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 729	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	2.7	0.20	0.20	99.80	
	3/8 inch	9.50	2.754	153.3	11.50	11.70	88.30	
	No. 4	4.75	2.016	439.3	32.95	44.66	55.34	
	No. 8	2.37	1.474	241.3	18.10	62.76	37.24	
	No. 16	1.18	1.077	153.0	11.48	74.23	25.77	
	No. 30	0.60	0.795	132.0	9.90	84.13	15.87	
	No. 50	0.30	0.582	110.9	8.32	92.45	7.55	
	No. 100	0.15	0.426	47.3	3.55	96.00	4.00	
	No. 200	0.08	0.312	43.1	3.23	99.23	0.77	
		Pan			10.2	0.77	100.00	0.00
				Total weight	1333.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	2233.0
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1333.1

## Sieve Analysis

Weight of bags & soil	1562.4
Weight of soil	1544.9

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 5 825	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	4.2	0.27	0.27	99.73	
	3/8 inch	9.50	2.754	200.5	12.98	13.25	86.75	
	No. 4	4.75	2.016	524.5	33.95	47.20	52.80	
	No. 8	2.37	1.474	255.9	16.56	63.76	36.24	
	No. 16	1.18	1.077	167.7	10.86	74.62	25.38	
	No. 30	0.60	0.795	137.0	8.87	83.49	16.51	
	No. 50	0.30	0.582	120.5	7.80	91.29	8.71	
	No. 100	0.15	0.426	59.0	3.82	95.11	4.89	
	No. 200	0.08	0.312	38.4	2.49	97.59	2.41	
		Pan			37.2	2.41	100.00	0.00
				Total weight	1544.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2444.8
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1544.9

## Sieve Analysis

Weight of bags & soil	1669.2
Weight of soil	1651.7

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
828	1/2 inch	12.50	3.116	9.2	0.56	0.56	99.44	
(Joint)	3/8 inch	9.50	2.754	180.8	10.95	11.50	88.50	
	No. 4	4.75	2.016	525.5	31.82	43.32	56.68	
	No. 8	2.37	1.474	301.5	18.25	61.57	38.43	
	No. 16	1.18	1.077	202.7	12.27	73.85	26.15	
	No. 30	0.60	0.795	183.4	11.10	84.95	15.05	
	No. 50	0.30	0.582	122.6	7.42	92.37	7.63	
	No. 100	0.15	0.426	66.3	4.01	96.39	3.61	
	No. 200	0.08	0.312	38.8	2.35	98.73	1.27	
	Pan			20.9	1.27	100.00	0.00	
			Total weight	1651.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2551.6
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1651.7

## Sieve Analysis

Weight of bags & soil	1524.1
Weight of soil	1506.5

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 829	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	13.9	0.92	0.92	99.08	
	3/8 inch	9.50	2.754	257.7	17.11	18.03	81.97	
	No. 4	4.75	2.016	450.9	29.93	47.96	52.04	
	No. 8	2.37	1.474	236.3	15.69	63.64	36.36	
	No. 16	1.18	1.077	141.3	9.38	73.02	26.98	
	No. 30	0.60	0.795	119.4	7.93	80.95	19.05	
	No. 50	0.30	0.582	115.8	7.69	88.64	11.36	
	No. 100	0.15	0.426	70.2	4.66	93.30	6.70	
	No. 200	0.08	0.312	46.3	3.07	96.37	3.63	
		Pan			54.7	3.63	100.00	0.00
				Total weight	1506.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2406.4
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1506.5

## Sieve Analysis

Weight of bags & soil	1442.5
Weight of soil	1425.0
Weight of empty bags	17.5

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
830	1/2 inch	12.50	3.116	4.1	0.29	0.29	99.71	
	3/8 inch	9.50	2.754	197.5	13.86	14.15	85.85	
	No. 4	4.75	2.016	462.4	32.45	46.60	53.40	
	No. 8	2.37	1.474	271.2	19.03	65.64	34.36	
	No. 16	1.18	1.077	132.8	9.32	74.96	25.04	
	No. 30	0.60	0.795	125.3	8.79	83.75	16.25	
	No. 50	0.30	0.582	117.1	8.22	91.97	8.03	
	No. 100	0.15	0.426	52.0	3.65	95.62	4.38	
	No. 200	0.08	0.312	44.3	3.11	98.73	1.27	
	Pan			18.1	1.27	100.00	0.00	
			Total weight	1424.8	100.00			

Operator	Joel Davenport	Weight of tear & soil	2324.7
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1424.8

## Sieve Analysis

Weight of bags & soil	1762.6
Weight of soil	1745.2

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 904	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	18.9	1.08	1.08	98.92	
	3/8 inch	9.50	2.754	259.9	14.89	15.98	84.02	
	No. 4	4.75	2.016	630.7	36.15	52.12	47.88	
	No. 8	2.37	1.474	256.3	14.69	66.81	33.19	
	No. 16	1.18	1.077	176.0	10.09	76.90	23.10	
	No. 30	0.60	0.795	167.5	9.60	86.50	13.50	
	No. 50	0.30	0.582	118.3	6.78	93.28	6.72	
	No. 100	0.15	0.426	55.7	3.19	96.47	3.53	
	No. 200	0.08	0.312	38.5	2.21	98.68	1.32	
		Pan			23.1	1.32	100.00	0.00
			Total weight	1744.9	100.00			

Operator	Joel Davenport	Weight of tear & soil	2644.8
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1744.9



# Sieve Analysis

Weight of bags & soil	1599.8
Weight of soil	1582.5

Weight of empty bags	17.3
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 906	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	5.5	0.35	0.35	99.65	
	3/8 inch	9.50	2.754	218.3	13.80	14.14	85.86	
	No. 4	4.75	2.016	581.2	36.73	50.88	49.12	
	No. 8	2.37	1.474	253.3	16.01	66.88	33.12	
	No. 16	1.18	1.077	155.0	9.80	76.68	23.32	
	No. 30	0.60	0.795	146.2	9.24	85.92	14.08	
	No. 50	0.30	0.582	101.2	6.40	92.31	7.69	
	No. 100	0.15	0.426	53.5	3.38	95.70	4.30	
	No. 200	0.08	0.312	50.5	3.19	98.89	1.11	
		Pan			17.6	1.11	100.00	0.00
Total weight				1582.3	100.00			

Operator	Joel Davenport	Weight of tear & soil	2482.2
Date	6/16/98	Weight of tear	899.9
Remarks		Weight of soil	1582.3

## Sieve Analysis

Weight of bags & soil	1458.2
Weight of soil	1440.5

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 908	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	3.8	0.26	0.26	99.74	
	3/8 inch	9.50	2.754	317.9	22.07	22.34	77.66	
	No. 4	4.75	2.016	531.3	36.89	59.22	40.78	
	No. 8	2.37	1.474	185.6	12.89	72.11	27.89	
	No. 16	1.18	1.077	113.4	7.87	79.98	20.02	
	No. 30	0.60	0.795	99.7	6.92	86.91	13.09	
	No. 50	0.30	0.582	86.0	5.97	92.88	7.12	
	No. 100	0.15	0.426	44.7	3.10	95.98	4.02	
	No. 200	0.08	0.312	37.2	2.58	98.56	1.44	
		Pan			20.7	1.44	100.00	0.00
			Total weight	1440.3	100.00			

Operator	Joel Davenport	Weight of tear & soil	2340.3
Date	6/17/98	Weight of tear	899.9
Remarks		Weight of soil	1440.4

## Sieve Analysis

Weight of empty bags      17.6

Weight of bags & soil      1444.0  
Weight of soil      1426.4

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 910	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	171.9	12.05	12.05	87.95
	No. 4	4.75	2.016	496.2	34.79	46.84	53.16
	No. 8	2.37	1.474	253.1	17.75	64.59	35.41
	No. 16	1.18	1.077	140.5	9.85	74.44	25.56
	No. 30	0.60	0.795	115.7	8.11	82.55	17.45
	No. 50	0.30	0.582	128.5	9.01	91.56	8.44
	No. 100	0.15	0.426	52.8	3.70	95.26	4.74
	No. 200	0.08	0.312	41.1	2.88	98.14	1.86
		Pan			26.5	1.86	100.00
			Total weight	1426.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2326.2
Date	6/17/98	Weight of tear	900.0
Remarks		Weight of soil	1426.2

## Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil 1300.5  
Weight of soil 1283.0

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
912	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	189.9	14.80	14.80	85.20	
	No. 4	4.75	2.016	444.1	34.62	49.42	50.58	
	No. 8	2.37	1.474	221.9	17.30	66.72	33.28	
	No. 16	1.18	1.077	122.8	9.57	76.29	23.71	
	No. 30	0.60	0.795	108.5	8.46	84.75	15.25	
	No. 50	0.30	0.582	93.1	7.26	92.00	8.00	
	No. 100	0.15	0.426	52.6	4.10	96.10	3.90	
	No. 200	0.08	0.312	28.4	2.21	98.32	1.68	
	Pan			21.6	1.68	100.00	0.00	
			Total weight	1282.9	100.00			

Operator	Joel Davenport	Weight of tear & soil	2182.9
Date	6/17/98	Weight of tear	899.9
Remarks		Weight of soil	1283.0

## Sieve Analysis

Weight of bags & soil	1285.9
Weight of soil	1268.4

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 914	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00	
	3/8 inch	9.50	2.754	250.8	19.78	19.78	80.22	
	No. 4	4.75	2.016	428.0	33.75	53.53	46.47	
	No. 8	2.37	1.474	186.7	14.72	68.26	31.74	
	No. 16	1.18	1.077	105.8	8.34	76.60	23.40	
	No. 30	0.60	0.795	84.6	6.67	83.27	16.73	
	No. 50	0.30	0.582	94.2	7.43	90.70	9.30	
	No. 100	0.15	0.426	49.6	3.91	94.61	5.39	
	No. 200	0.08	0.312	36.8	2.90	97.52	2.48	
		Pan			31.5	2.48	100.00	0.00
			Total weight	1268.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	2167.7
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1267.8

## Sieve Analysis

Weight of empty bags      17.6

Weight of bags & soil      1616.2  
 Weight of soil      1598.6

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
925	1/2 inch	12.50	3.116	5.4	0.34	0.34	99.66
	3/8 inch	9.50	2.754	203.6	12.74	13.08	86.92
	No. 4	4.75	2.016	521.4	32.63	45.71	54.29
	No. 8	2.37	1.474	293.8	18.39	64.09	35.91
	No. 16	1.18	1.077	200.1	12.52	76.61	23.39
	No. 30	0.60	0.795	124.0	7.76	84.37	15.63
	No. 50	0.30	0.582	114.1	7.14	91.51	8.49
	No. 100	0.15	0.426	66.2	4.14	95.66	4.34
	No. 200	0.08	0.312	44.0	2.75	98.41	1.59
	Pan			25.4	1.59	100.00	0.00
			Total weight	1598.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2498.0
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1598.1

## Sieve Analysis

Weight of empty bags      17.5

Weight of bags & soil      1550.8  
 Weight of soil      1533.3

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 5 926	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	4.3	0.28	0.28	99.72
	3/8 inch	9.50	2.754	196.3	12.80	13.08	86.92
	No. 4	4.75	2.016	500.6	32.65	45.73	54.27
	No. 8	2.37	1.474	283.9	18.52	64.25	35.75
	No. 16	1.18	1.077	198.5	12.95	77.19	22.81
	No. 30	0.60	0.795	137.1	8.94	86.13	13.87
	No. 50	0.30	0.582	105.1	6.85	92.99	7.01
	No. 100	0.15	0.426	48.2	3.14	96.13	3.87
	No. 200	0.08	0.312	36.0	2.35	98.48	1.52
		Pan			23.3	1.52	100.00
			Total weight	1533.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2432.9
Date	6/23/98	Weight of tear	899.8
Remarks		Weight of soil	1533.1

## Sieve Analysis

Weight of bags & soil	1604.0
Weight of soil	1586.5

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 5 929	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	7.5	0.47	0.47	99.53	
	3/8 inch	9.50	2.754	181.4	11.43	11.91	88.09	
	No. 4	4.75	2.016	503.6	31.74	43.65	56.35	
	No. 8	2.37	1.474	300.0	18.91	62.56	37.44	
	No. 16	1.18	1.077	206.9	13.04	75.61	24.39	
	No. 30	0.60	0.795	158.6	10.00	85.60	14.40	
	No. 50	0.30	0.582	103.4	6.52	92.12	7.88	
	No. 100	0.15	0.426	56.3	3.55	95.67	4.33	
	No. 200	0.08	0.312	38.9	2.45	98.12	1.88	
		Pan			29.8	1.88	100.00	0.00
			Total weight	1586.4	100.00			

Operator	Joel Davenport	Weight of tear & soil	2486.0
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1586.1



## Sieve Analysis

Weight of bags & soil	1524.6
Weight of soil	1507.2

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 1025	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	3.6	0.24	0.24	99.76	
	3/8 inch	9.50	2.754	194.0	12.87	13.11	86.89	
	No. 4	4.75	2.016	489.8	32.50	45.61	54.39	
	No. 8	2.37	1.474	273.9	18.18	63.79	36.21	
	No. 16	1.18	1.077	167.1	11.09	74.88	25.12	
	No. 30	0.60	0.795	138.2	9.17	84.05	15.95	
	No. 50	0.30	0.582	108.7	7.21	91.26	8.74	
	No. 100	0.15	0.426	57.9	3.84	95.10	4.90	
	No. 200	0.08	0.312	36.3	2.41	97.51	2.49	
	Pan			37.5	2.49	100.00	0.00	
			Total weight	1507.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	2406.9
Date	6/11/98	Weight of tear	899.9
Remarks		Weight of soil	1507.0

## Sieve Analysis

Weight of bags & soil	1645.2
Weight of soil	1627.6

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
1029	1/2 inch	12.50	3.116	10.0	0.61	0.61	99.39	
	3/8 inch	9.50	2.754	234.0	14.38	14.99	85.01	
	No. 4	4.75	2.016	537.4	33.02	48.01	51.99	
	No. 8	2.37	1.474	273.2	16.79	64.79	35.21	
	No. 16	1.18	1.077	196.1	12.05	76.84	23.16	
	No. 30	0.60	0.795	158.8	9.76	86.60	13.40	
	No. 50	0.30	0.582	118.0	7.25	93.85	6.15	
	No. 100	0.15	0.426	45.0	2.76	96.61	3.39	
	No. 200	0.08	0.312	39.5	2.43	99.04	0.96	
	Pan			15.6	0.96	100.00	0.00	
			Total weight	1627.6	100.00			

Operator	Joel Davenport	Weight of tear & soil	2527.5
Date	6/23/98	Weight of tear	899.9
Remarks		Weight of soil	1627.6

## Sieve Analysis

Weight of bags & soil	1654.1
Weight of soil	1636.6

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 5 1129	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	4.1	0.25	0.25	99.75	
	3/8 inch	9.50	2.754	256.5	15.67	15.92	84.08	
	No. 4	4.75	2.016	584.7	35.73	51.65	48.35	
	No. 8	2.37	1.474	239.9	14.66	66.31	33.69	
	No. 16	1.18	1.077	170.7	10.43	76.74	23.26	
	No. 30	0.60	0.795	168.3	10.28	87.02	12.98	
	No. 50	0.30	0.582	116.4	7.11	94.13	5.87	
	No. 100	0.15	0.426	46.3	2.83	96.96	3.04	
	No. 200	0.08	0.312	33.0	2.02	98.98	1.02	
		Pan			16.7	1.02	100.00	0.00
			Total weight	1636.6	100.00			

Operator	Joel Davenport		Weight of tear & soil	2536.5
Date	6/11/98		Weight of tear	899.9
Remarks			Weight of soil	1636.6

# Site 6

# Segregation Survey

*West of Knoxville*

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Stirling Direction: W/B  
 Region: UNIV Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

<u>Continuous</u>			
<u>Systematic</u>			
<u>Random</u>			

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.;

or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

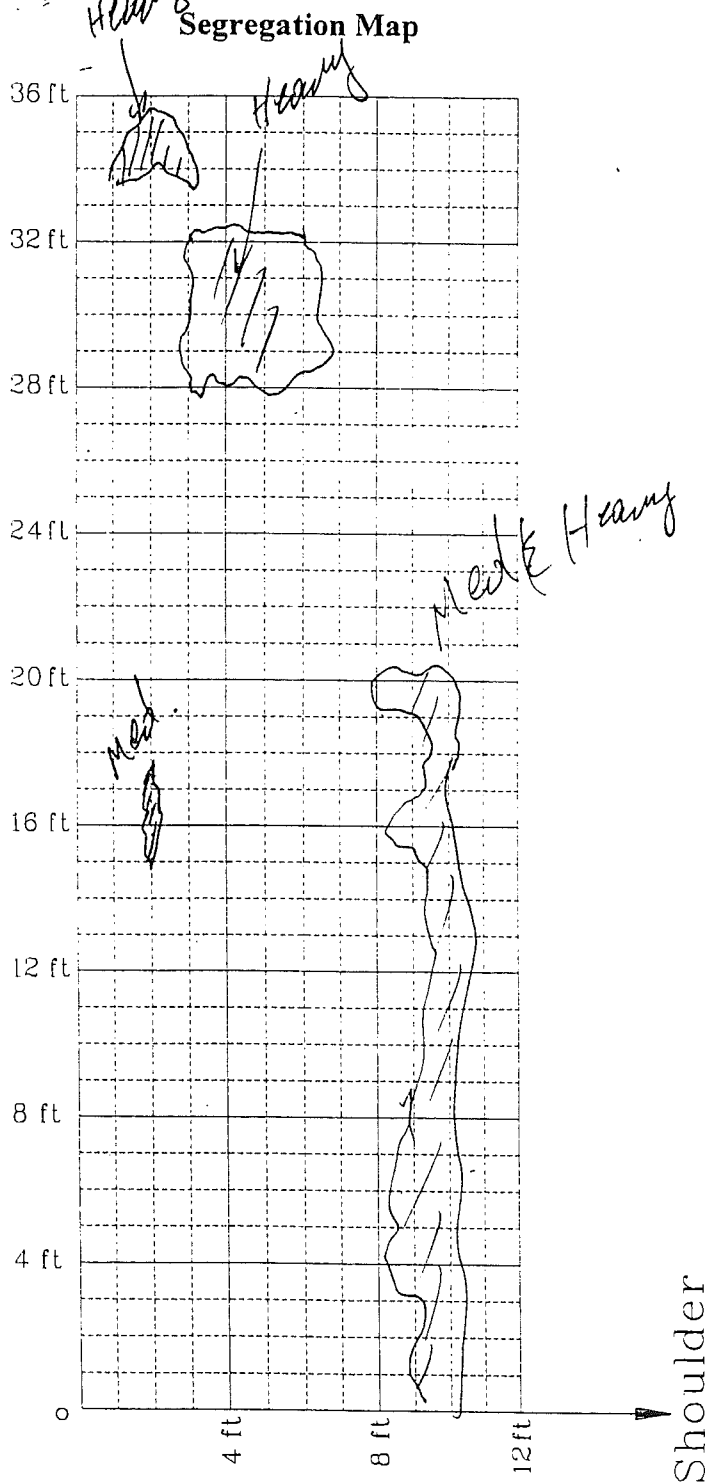
Low       Moderate       High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: West bound

Region: \_\_\_\_\_ Mile Post: from STARLING - 1.80 W. of KNOWLES

Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous \_\_\_\_\_

Systematic \_\_\_\_\_

Random \_\_\_\_\_

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

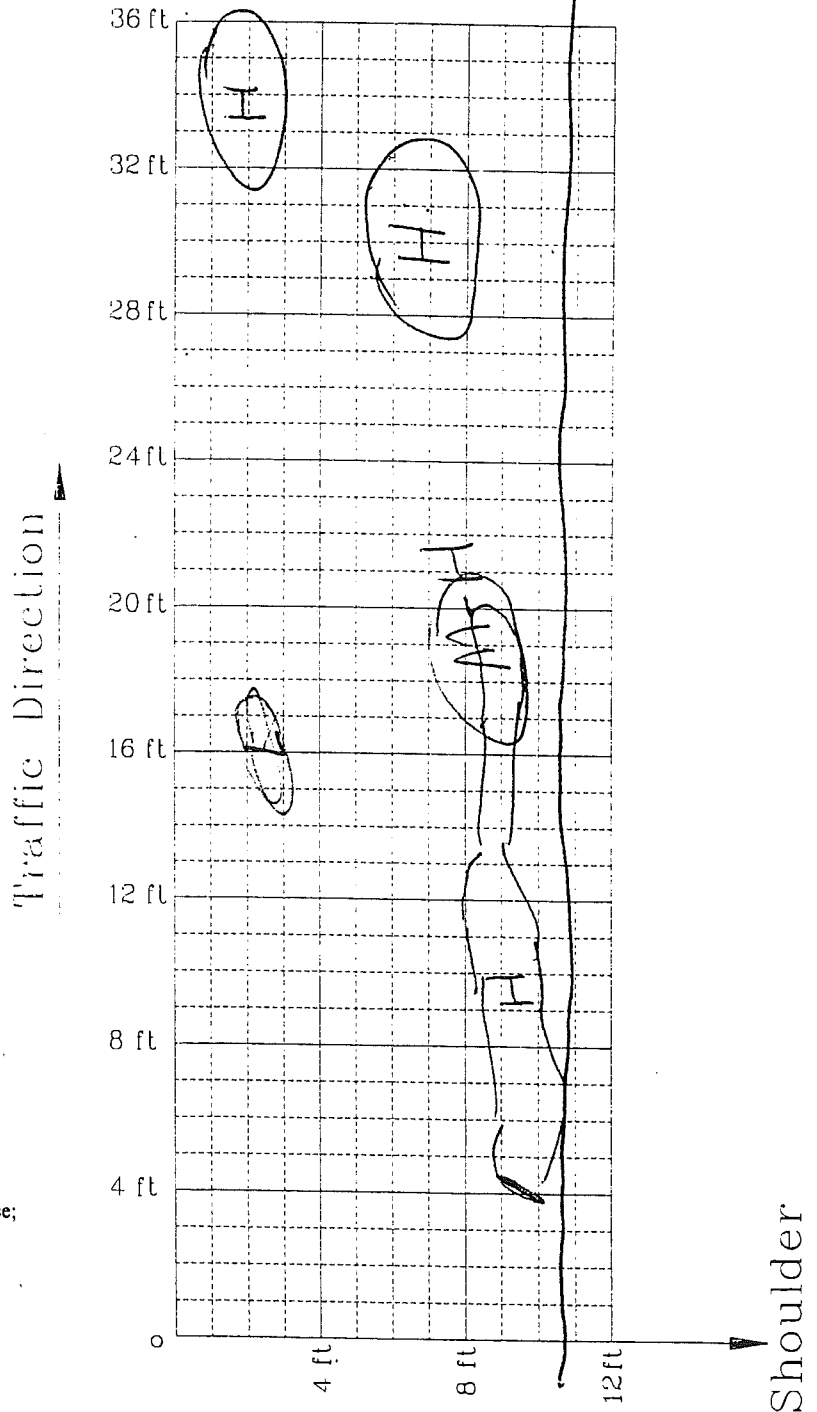
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

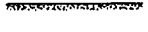
Weather:

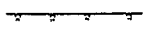
Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Sterling Rd Direction: W.B.  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 6 ADT: \_\_\_\_\_

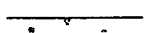
**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

**Continuous** 

**Systematic** 

**Random** 

*kind of road, problem repeats down road*

**Degree of Segregation**

- Heavy:** stone against stone, little or no matrix (fine)
- Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low  Moderate  High
- Low:** aggregate or binder has started to wear away, but not progressed significantly
- Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low  Moderate  High
- Low:** a crack with a mean width  $\leq 0.25$  in.
- Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

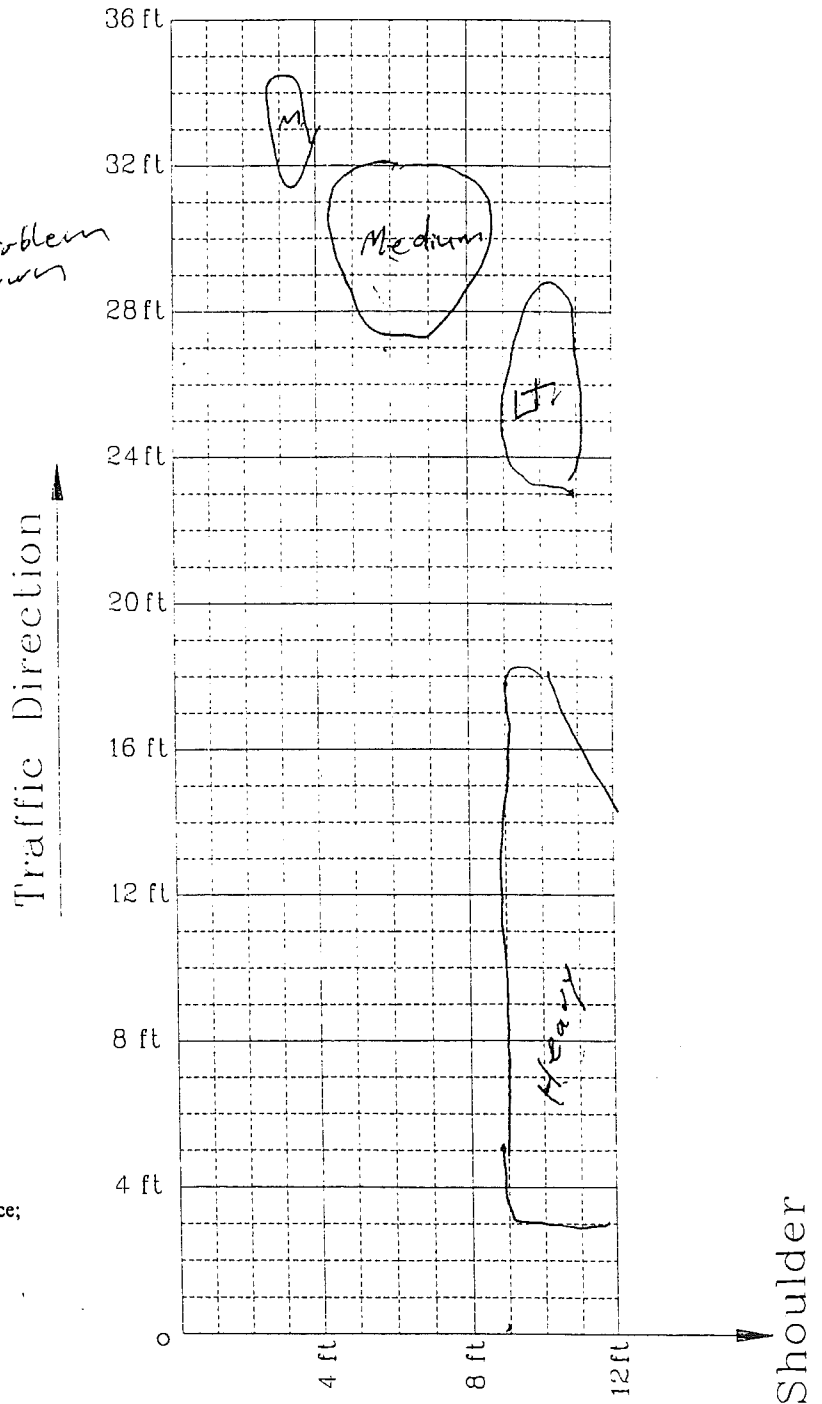
**3. Rut Depth**

**4. Flushing**

- Low  Moderate  High
- Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt
- High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

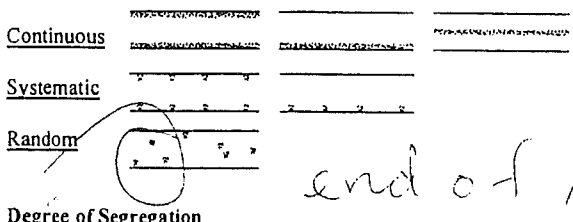
Weather:

Surveyor: E (your name)  
 Control Section Number: \_\_\_\_\_ Route: Sterling Direction: West  
 Region: Univ. Mile Post: from W. of Knowles  
 Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low     Moderate     High

- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low     Moderate     High

- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**

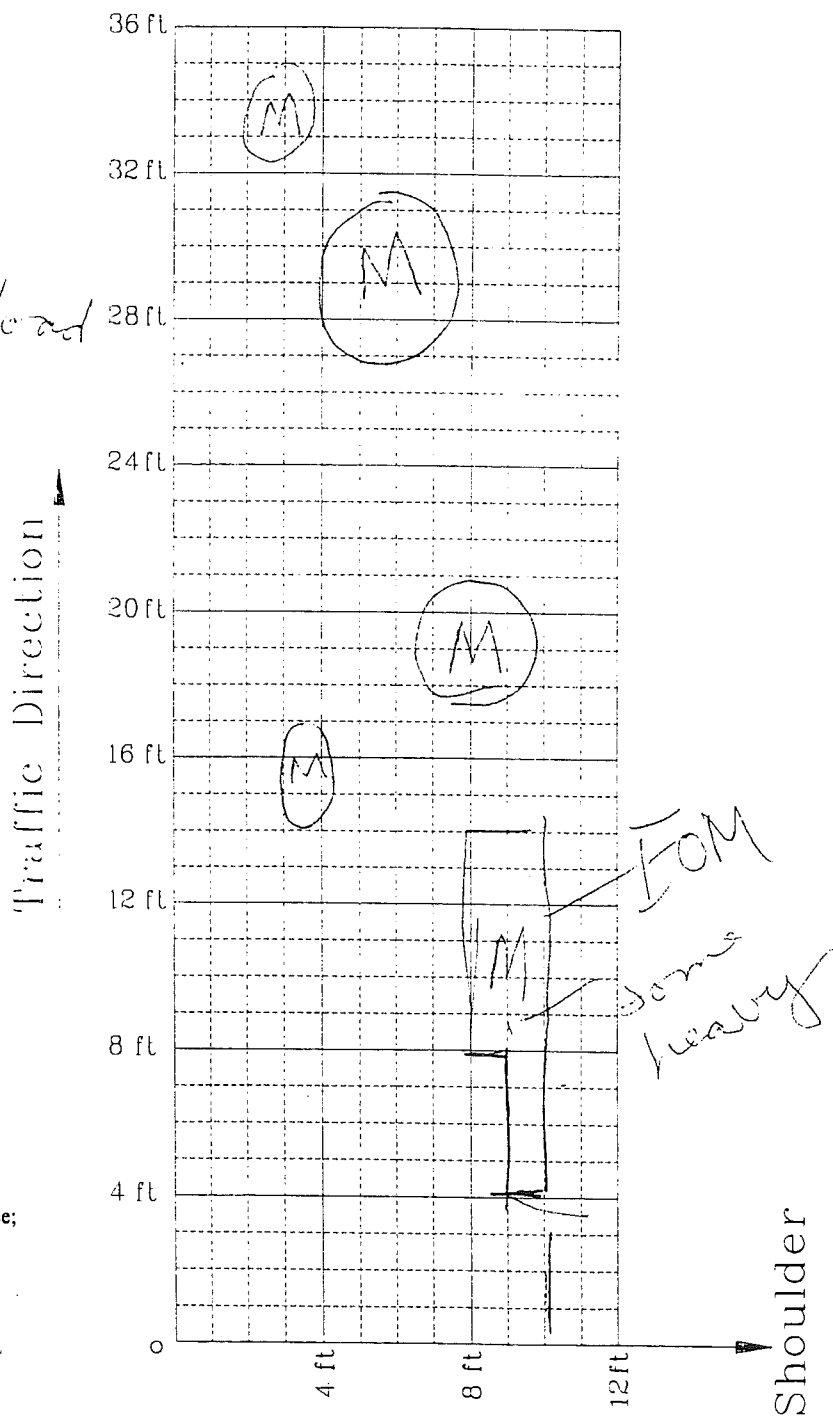
- Low     Moderate     High

- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*Some spots may ravel*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 3, 1997

Surveyor: \_\_\_\_\_ (your name) *Wed of K. Fowler Rd Sterling Rd* Weather: \_\_\_\_\_  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: *West Bd.*  
 Region: *UNIVERSITY* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *6* ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
**Random** \_\_\_\_\_

## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

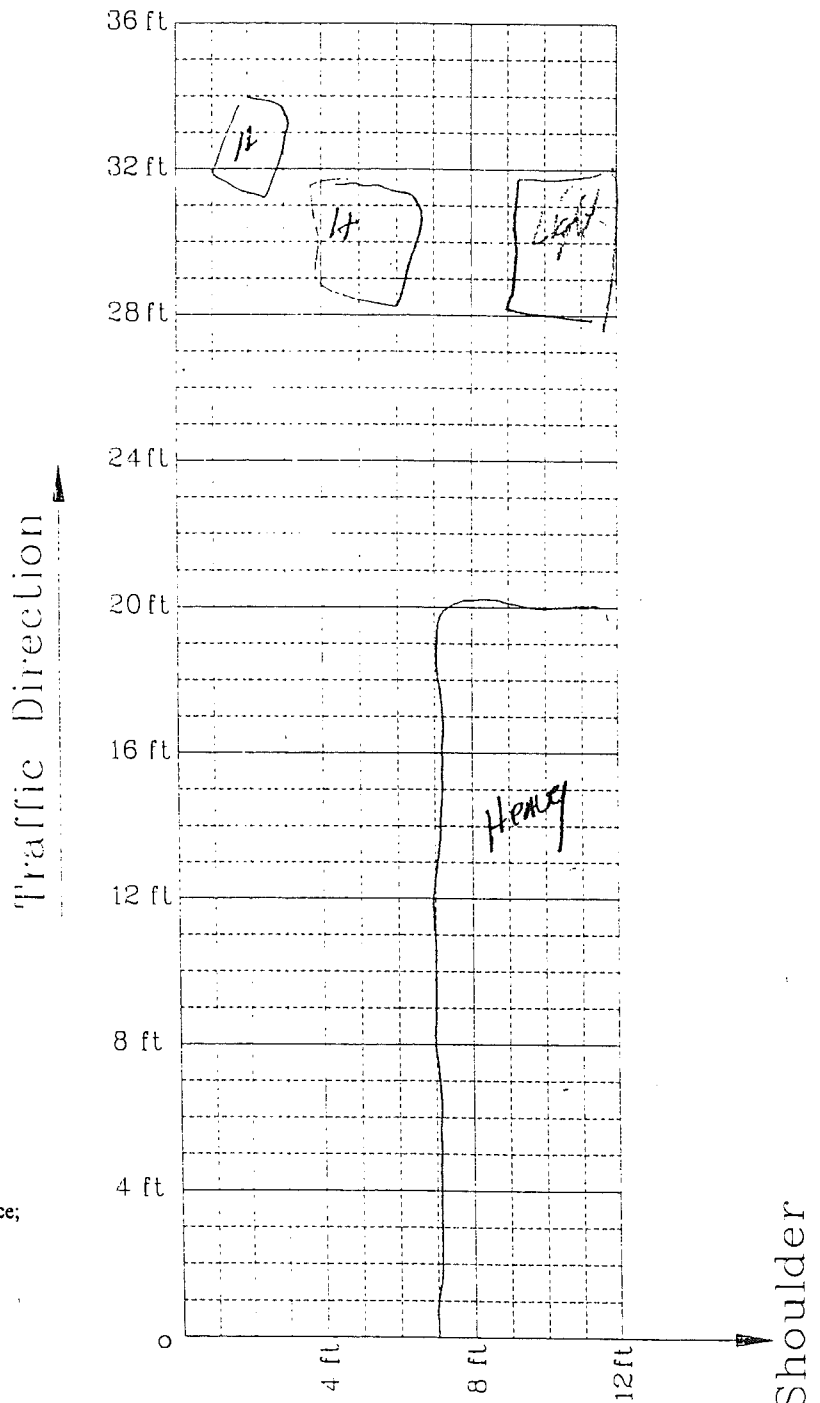
### 3. Rut Depth

### 4. Flushing

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Steelman Rd Direction: West  
 Region: Univ. Mile Post: from West of to Kenilworth  
 Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flashing**

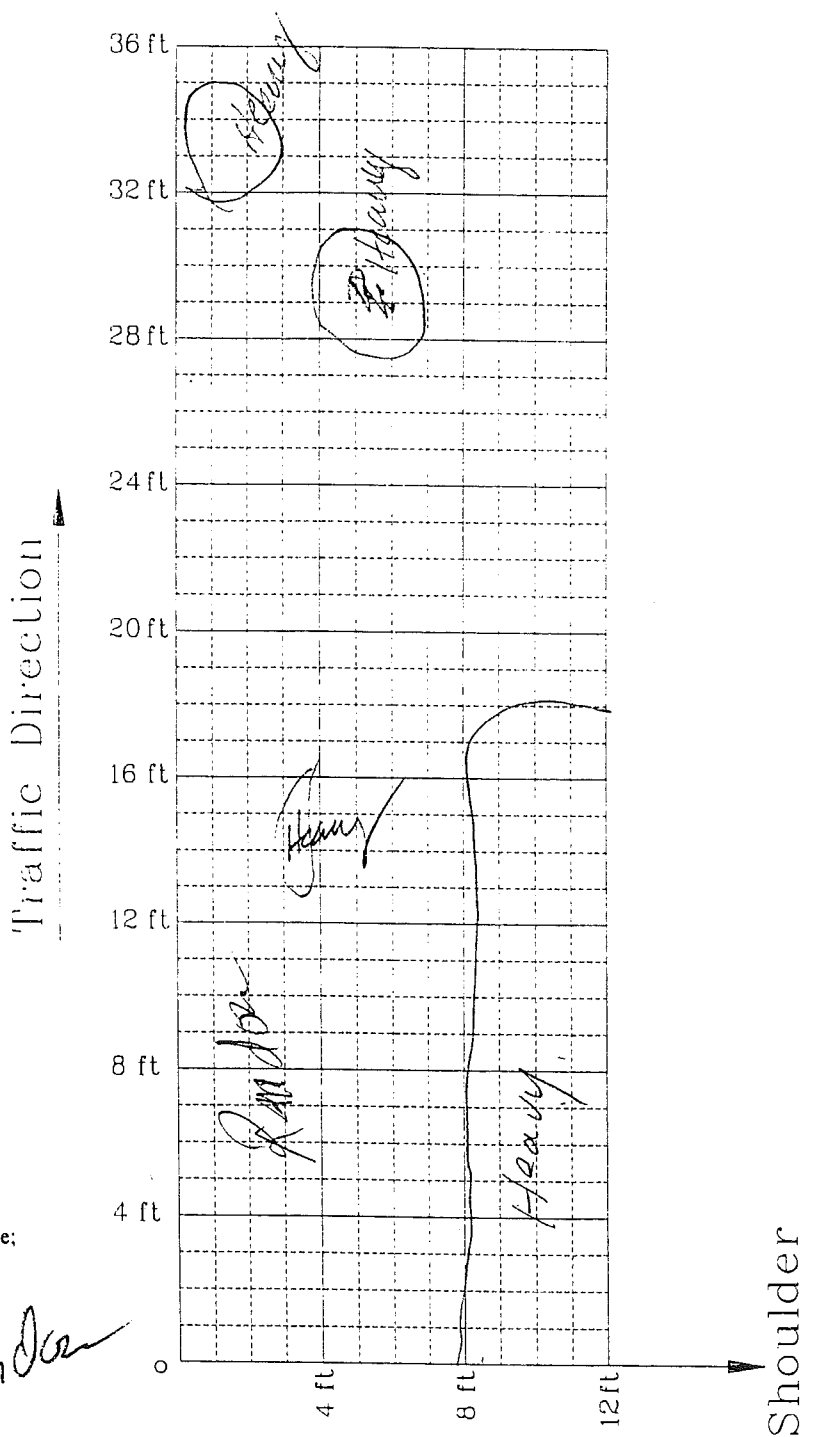
Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*End of load seg Random*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: Wet, nasty  
Bone Chilling

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: STERLING Rd. Direction: West Bd.  
 Region: UNIVERSITY - BL JACKSON Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_  
West of Knowles.

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
**Random** \_\_\_\_\_

## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low     Moderate     High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low     Moderate     High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

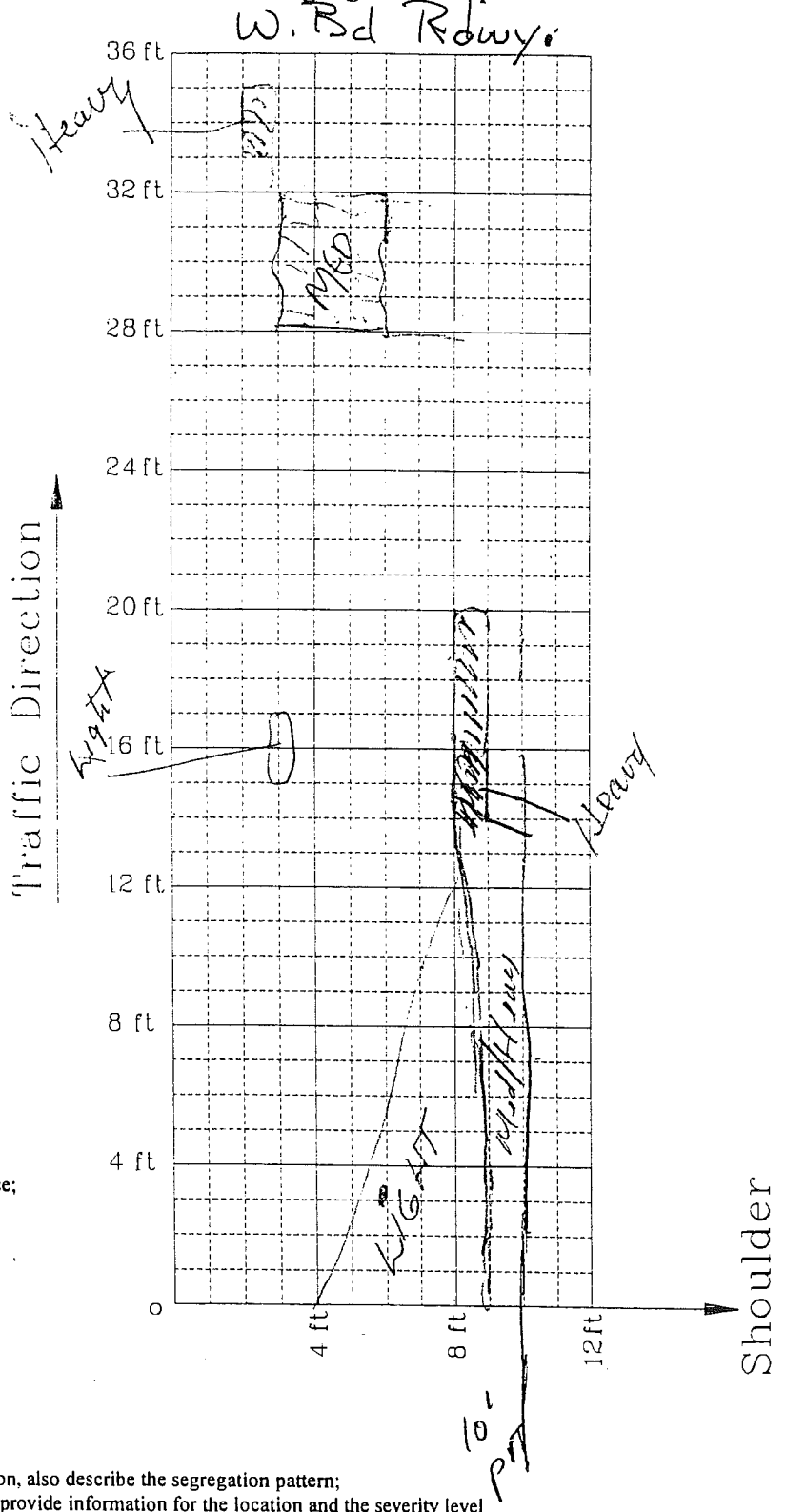
### 3. Rut Depth

### 4. Flushing

Low     Moderate     High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: light rain 30's

Surveyor: \_\_\_\_\_ (your name) *W. of Knowles*  
 Control Section Number: \_\_\_\_\_ Route: *Stirling Rd* Direction: *NB/WB*  
 Region: *UNIVERSITY* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *56* ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
 **Random** \_\_\_\_\_  
*load*

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
 **Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High

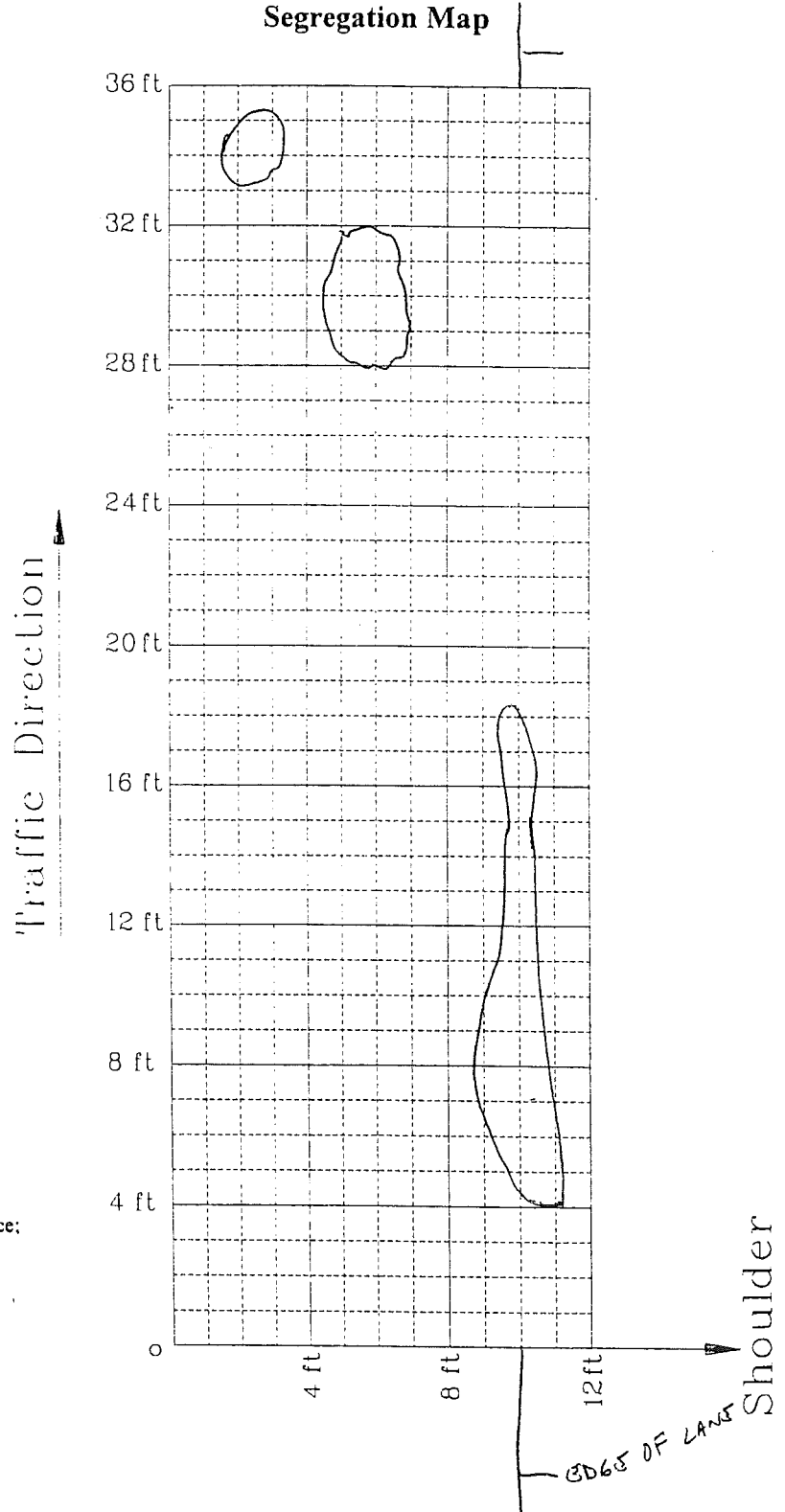
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

36 ° F

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: West Bound

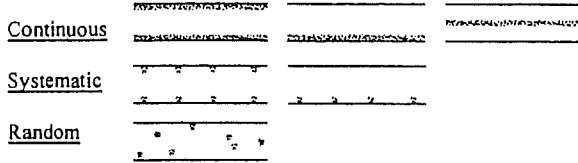
Region: \_\_\_\_\_ Mile Post: from west of Knoxville to 10

Section Number: \_\_\_\_\_ Test Site Number: 6 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat

**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High

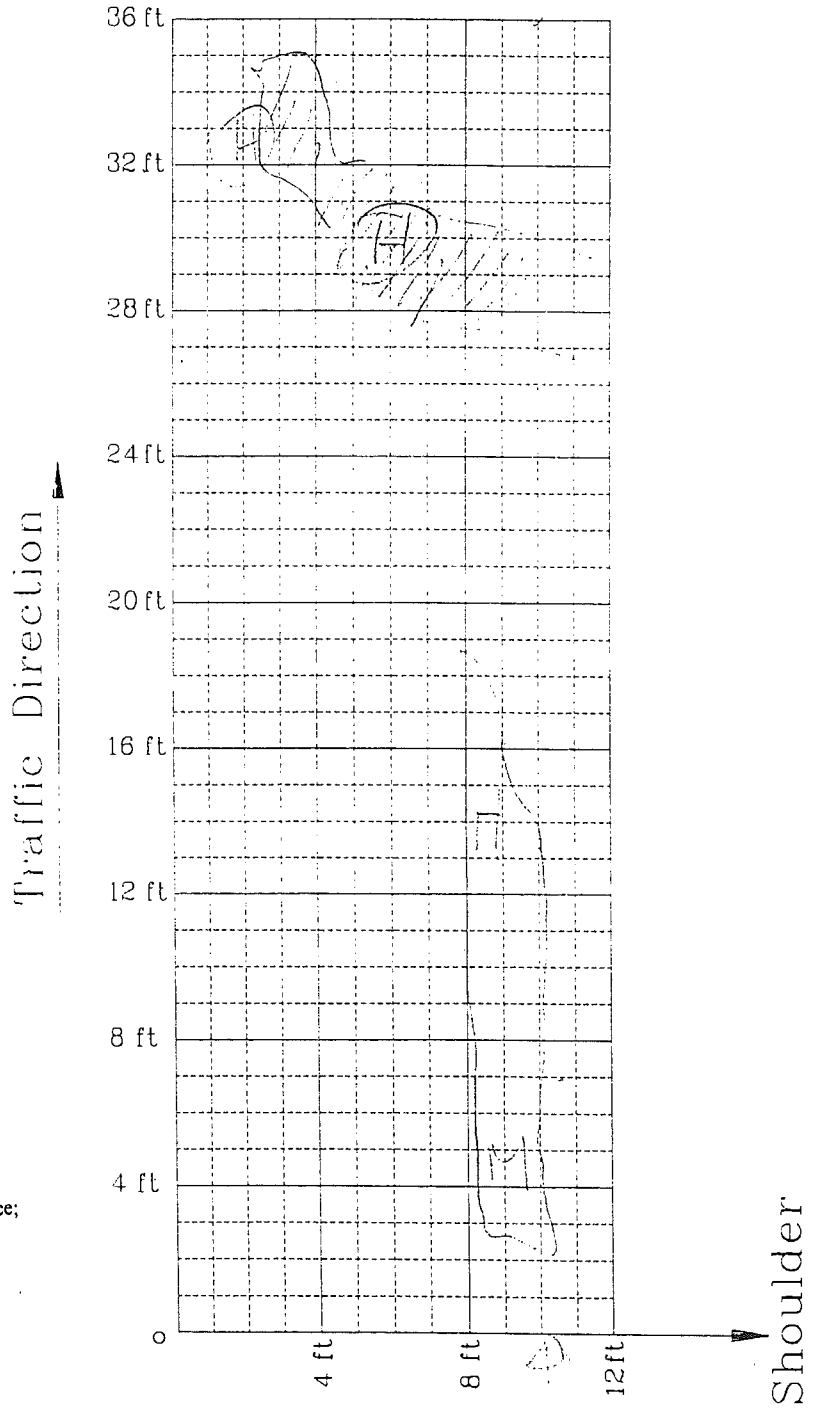
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Nuclear Density Sampling Data (Jan. 30, 1998)

**SITE 6**      **Sterling Road W. Bound (300' west of Knowles road),  
Hillsdale County**

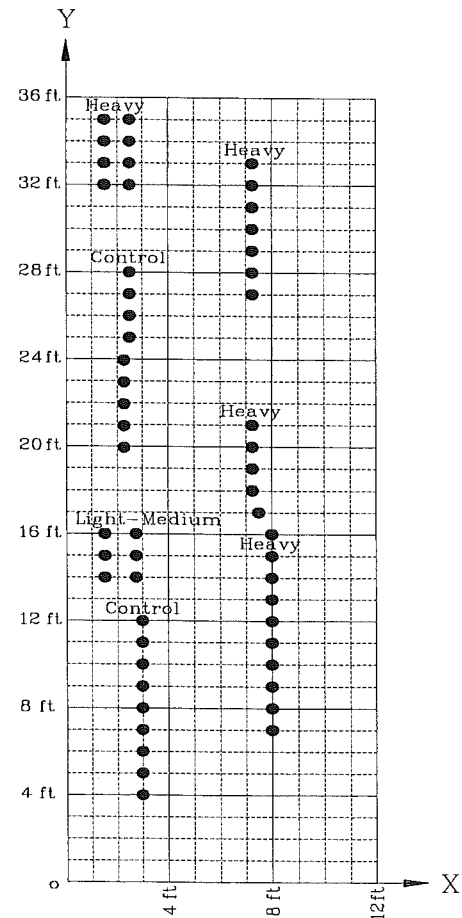
Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2847
	Moisture	673

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		mean		141.7		Sample 2		Sample 6	
Heavy		std		3.54		Heavy		Heavy	
0135	144.2	0235	138.8	0732	144.4	0721	145.4		
0134	140.2	0234	135.1	0731	143.0	0720	142.8		
0133	145.2	0233	142.1	0730	143.6	0719	140.4		
0132	145.4	0232	142.7	0729	140.3	0718	141.1		
				0728	142.3	0717	139.8		
				0727	143.3	0816	136.2		
				mean	142.8	mean	141.0		
				std	1.41	std	3.08		

Sample 4		mean		144.1	
M-L		std		1.70	
0116	145.4	0216	141.4		
0115	144.2	0215	142.8		
0114	145.2	0214	145.7		

Sample 3		Sample 5		Sample 7	
Control		Control		Heavy	
0228	147.1	0312	147.1	0815	139.9
0227	145.4	0311	147.5	0814	138.0
0226	147.0	0310	146.9	0813	135.5
0225	146.5	0309	145.3	0812	140.0
0224	146.8	0308	147.8	0811	140.6
0223	147.4	0307	147.1	0810	140.8
0222	146.8	0306	146.8	0809	137.7
0221	147.1	0305	147.9	0808	140.3
0220	148.0	0304	147.9	mean	139.1
mean	146.9	mean	147.1	std	1.86
std	0.71	std	0.81		



**Site 7**

# Segregation Survey

Date of Survey: Dec. 3, 1997

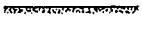
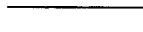
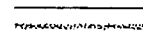
Weather:

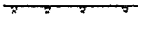
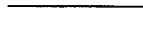

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Sherburne Direction: EB  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: \_\_\_\_\_

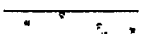


**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

**Continuous**    ←

**Systematic**   

**Random**   

**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**

Low  Moderate  High

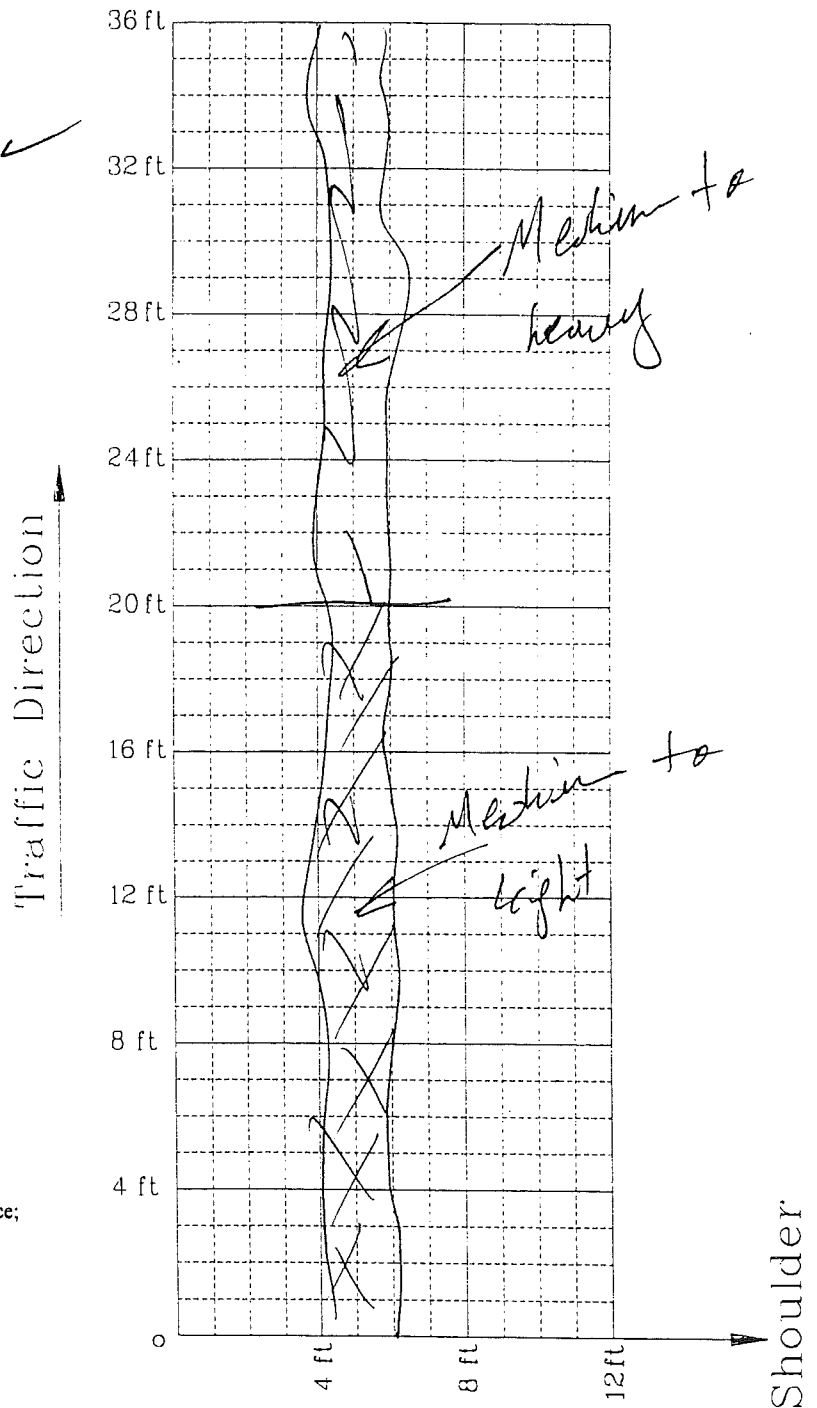
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: East

Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

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### 2. Cracking

Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

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High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low       Moderate       High

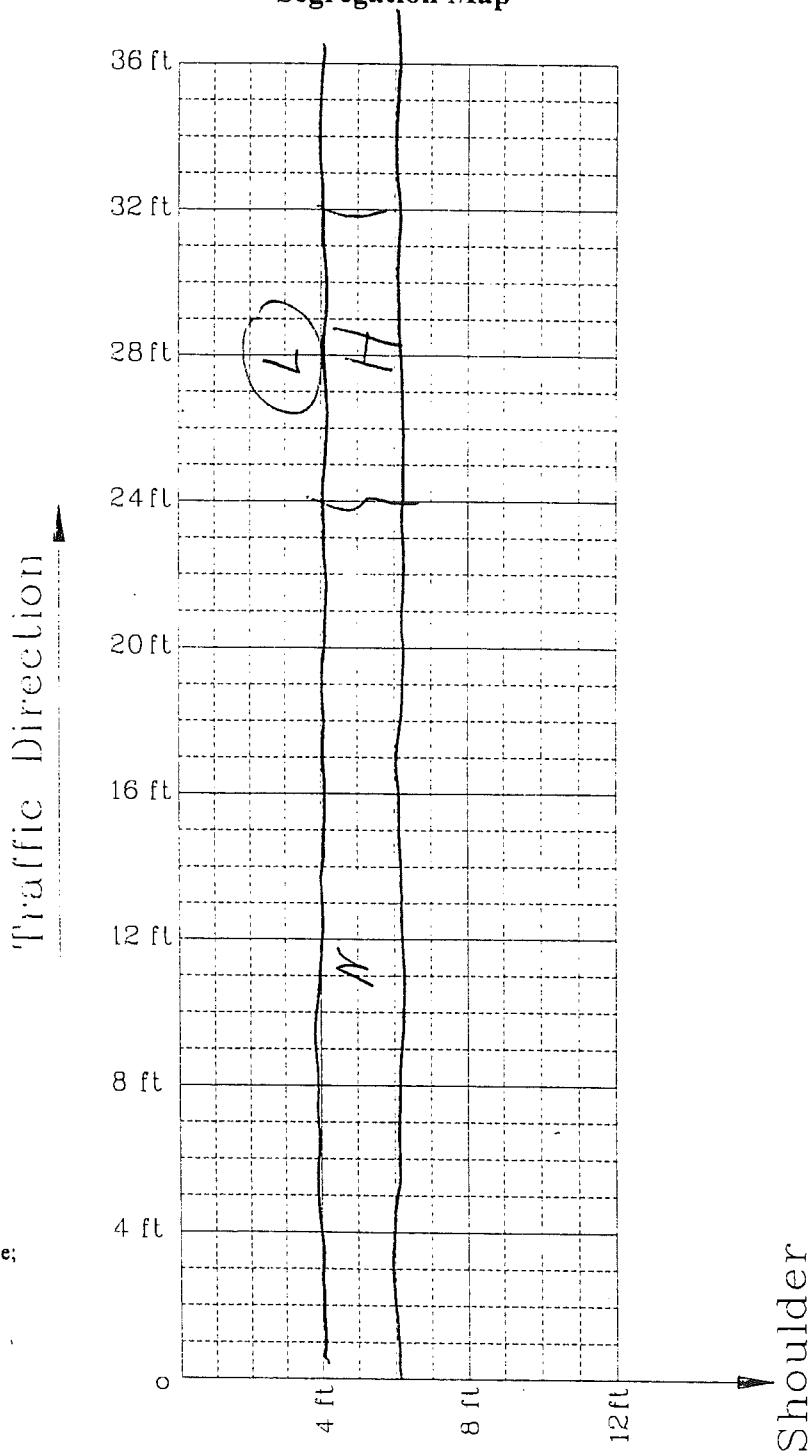
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

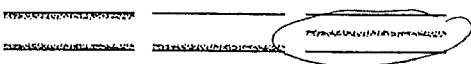
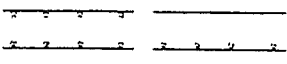
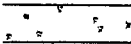
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: starting Direction: EB *Adjacent to site 6*  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: 1 Test Site Number: 7 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous   
Systematic   
Random 

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

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Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

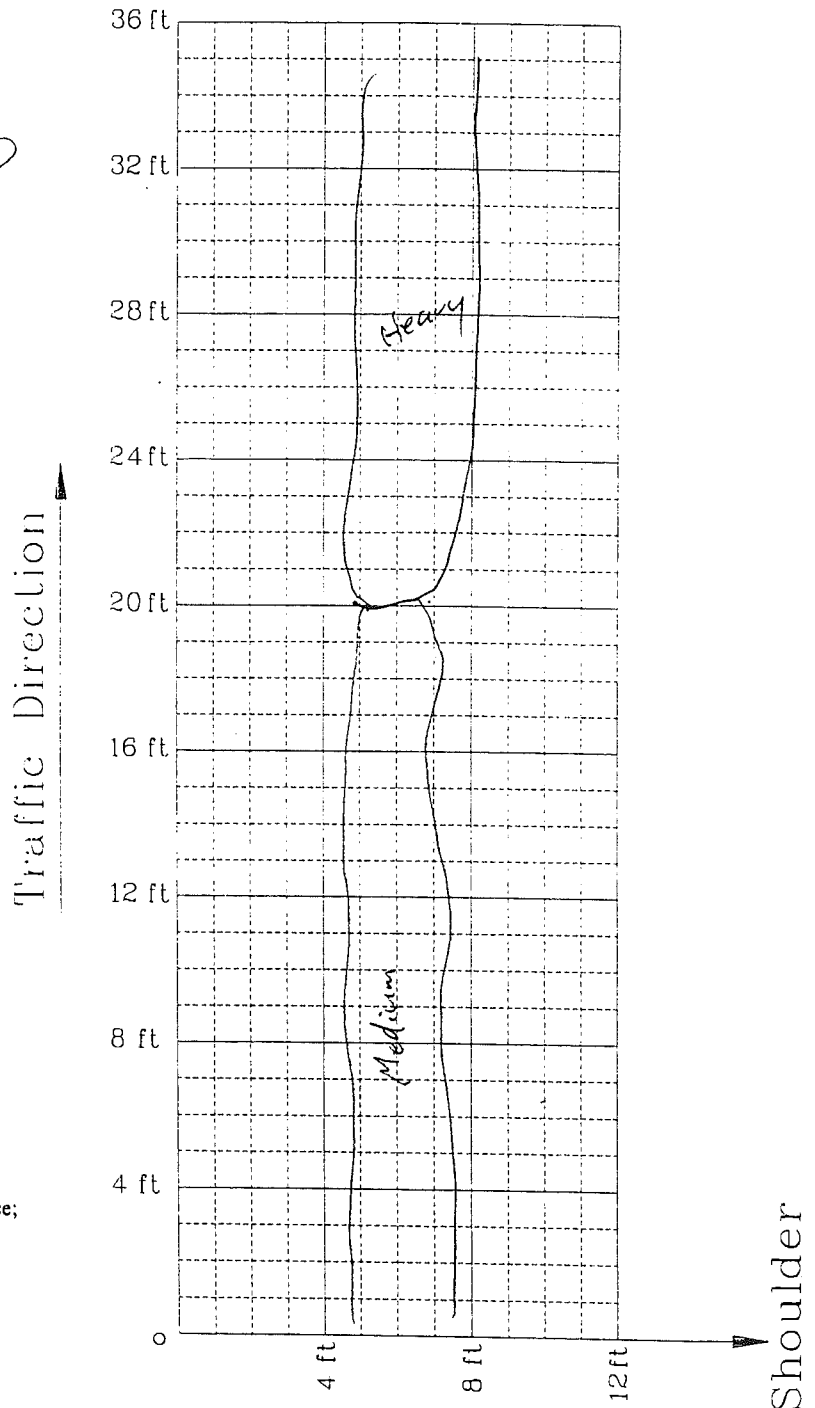
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Sterling Direction: East  
 Region: Ill. Mile Post: from W. of Knoxville to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: \_\_\_\_\_

**Definition of Segregation:**

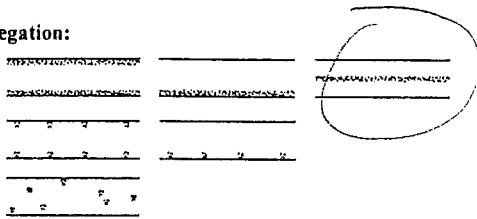
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous

Systematic

Random



**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)

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Low  Moderate  High

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Low  Moderate  High

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**3. Rut Depth**

**4. Flushing**

Low  Moderate  High

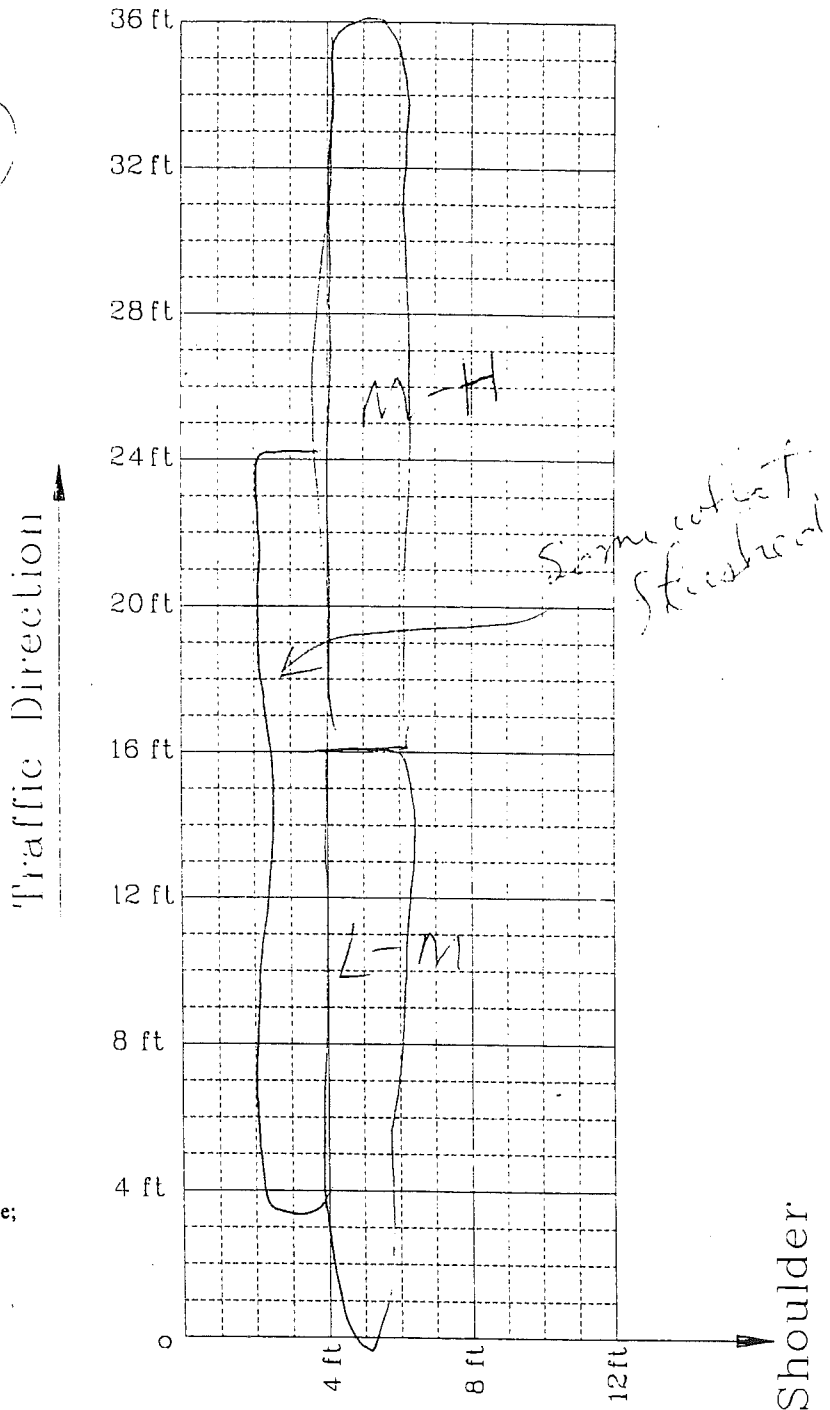
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**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

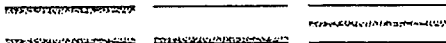
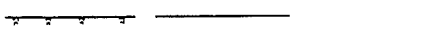

Weather: *EAST B*

Surveyor: \_\_\_\_\_ (your name) *Stirling Ryl*  
 Control Section Number: \_\_\_\_\_ Route: *360' West of Road 11* Direction: \_\_\_\_\_  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *7* ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
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## Distress to be Identified

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Low  Moderate  High

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Low  Moderate  High

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

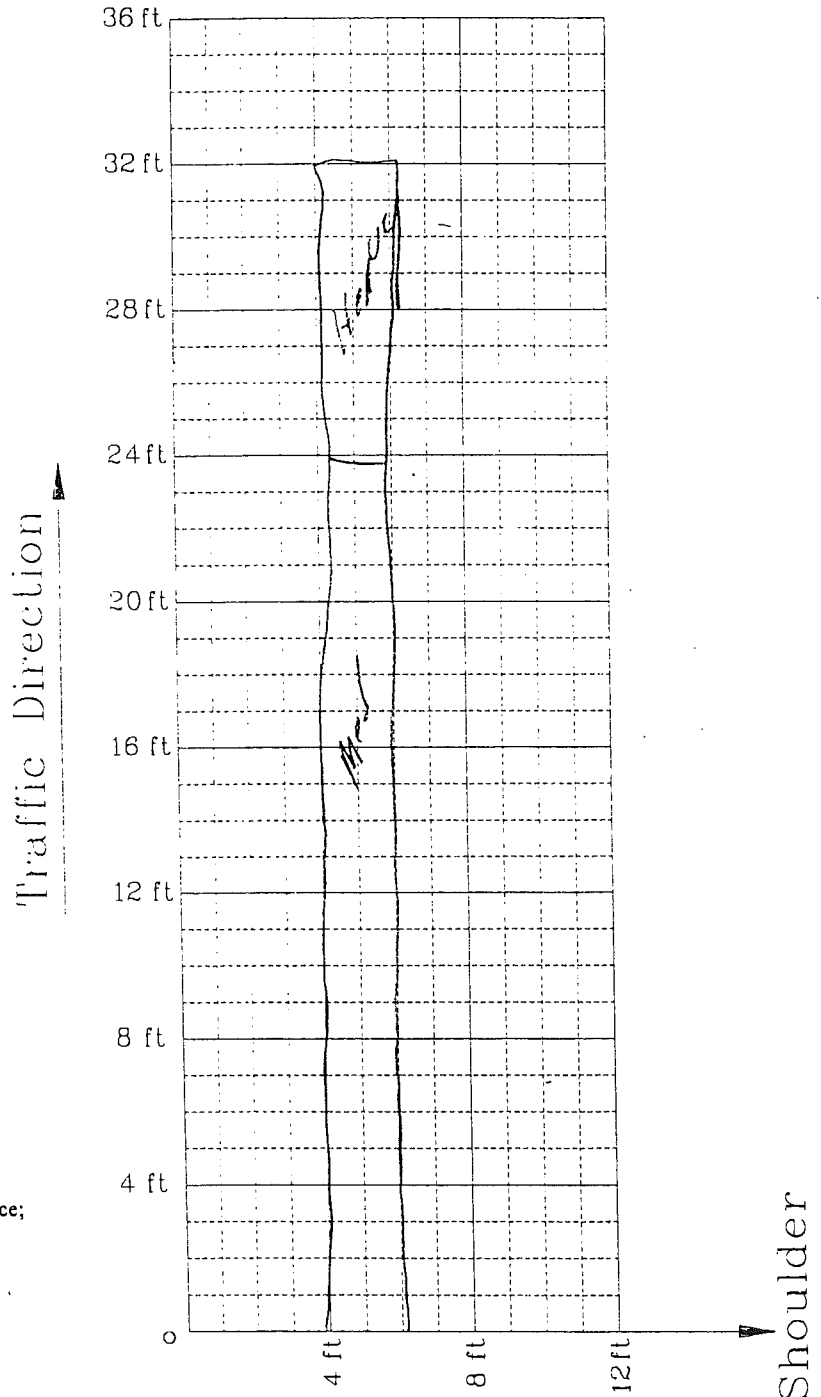
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## COMMENTS

## Segregation Map



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# Segregation Survey

Date of Survey: Dec. 3, 1997

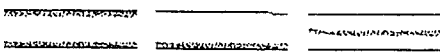
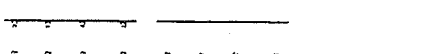
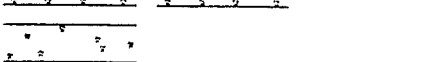
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 1 Route: Sterling Direction: East  
 Region: Ohio Mile Post: from west of to Knoules  
 Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
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### Distress to be Identified

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Low  Moderate  High

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#### 3. Rut Depth

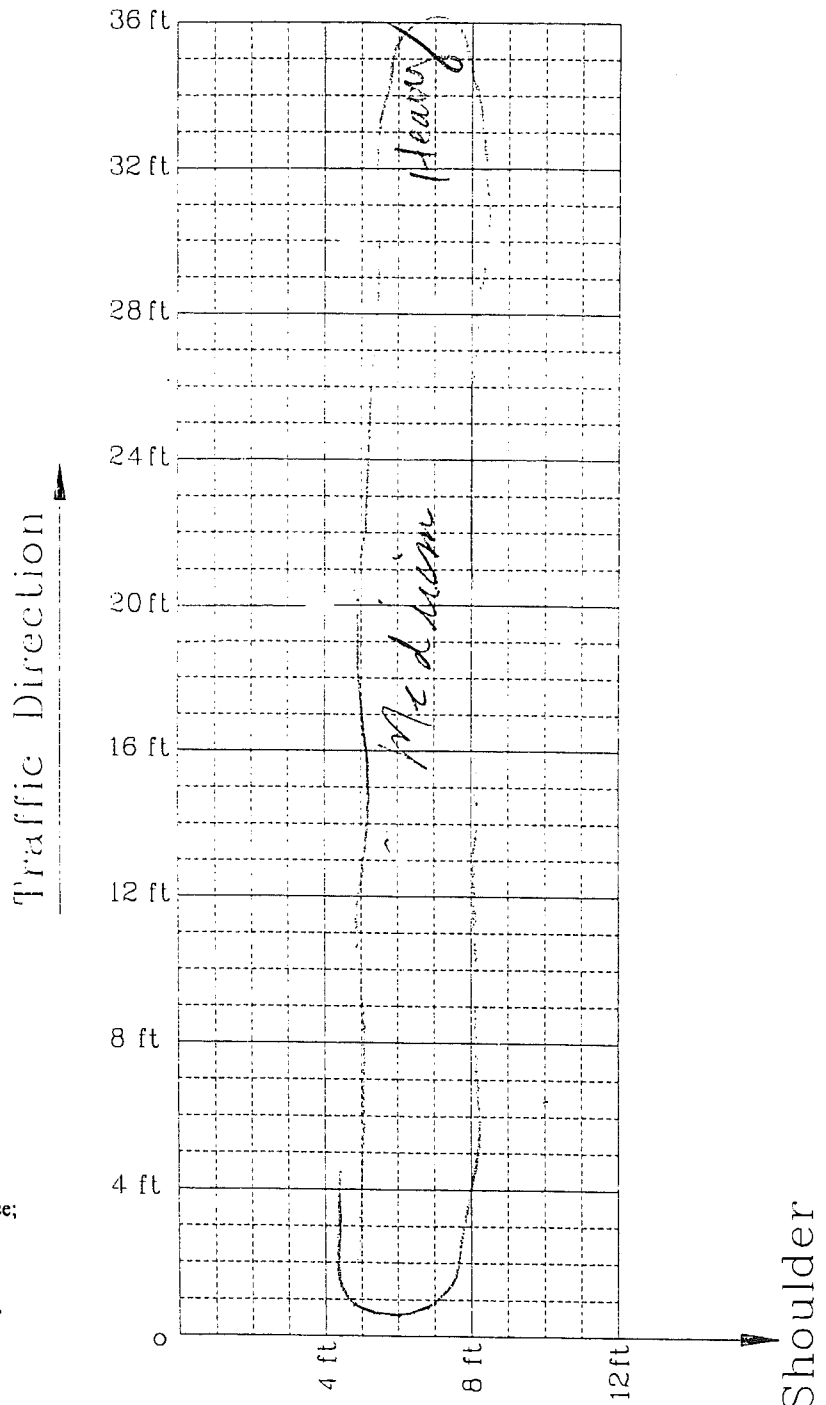
#### 4. Flushing

Low  Moderate  High

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**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



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# Segregation Survey

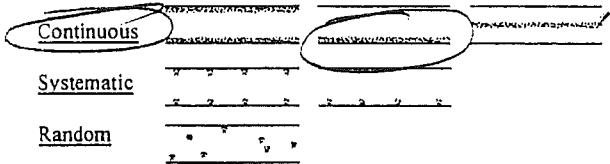
Date of Survey: Dec. 3, 1997  
 Weather: Wet, Nasty, Cold,

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: STERLING Direction: EAST Bd.  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: ?  
WEST

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low     Moderate     High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low     Moderate     High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

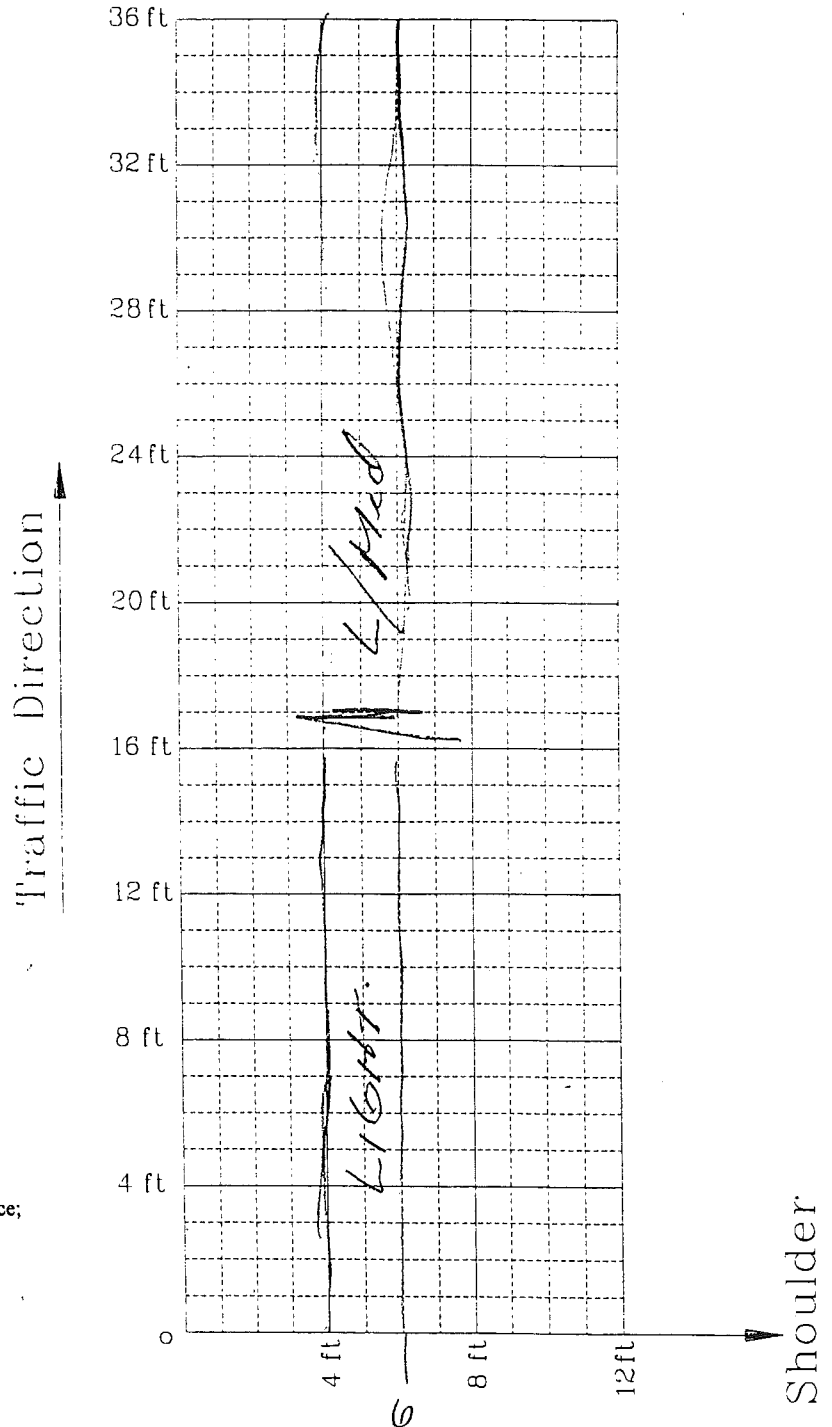
**3. Rut Depth**

**4. Flushing**

- Low     Moderate     High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: Light Rain

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: Hillsdale Co. Route: STERLING RD Direction: EB/SB

Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

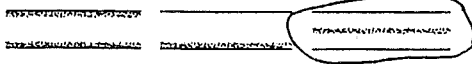
Section Number: \_\_\_\_\_ Test Site Number: #7 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous



Systematic



Random



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

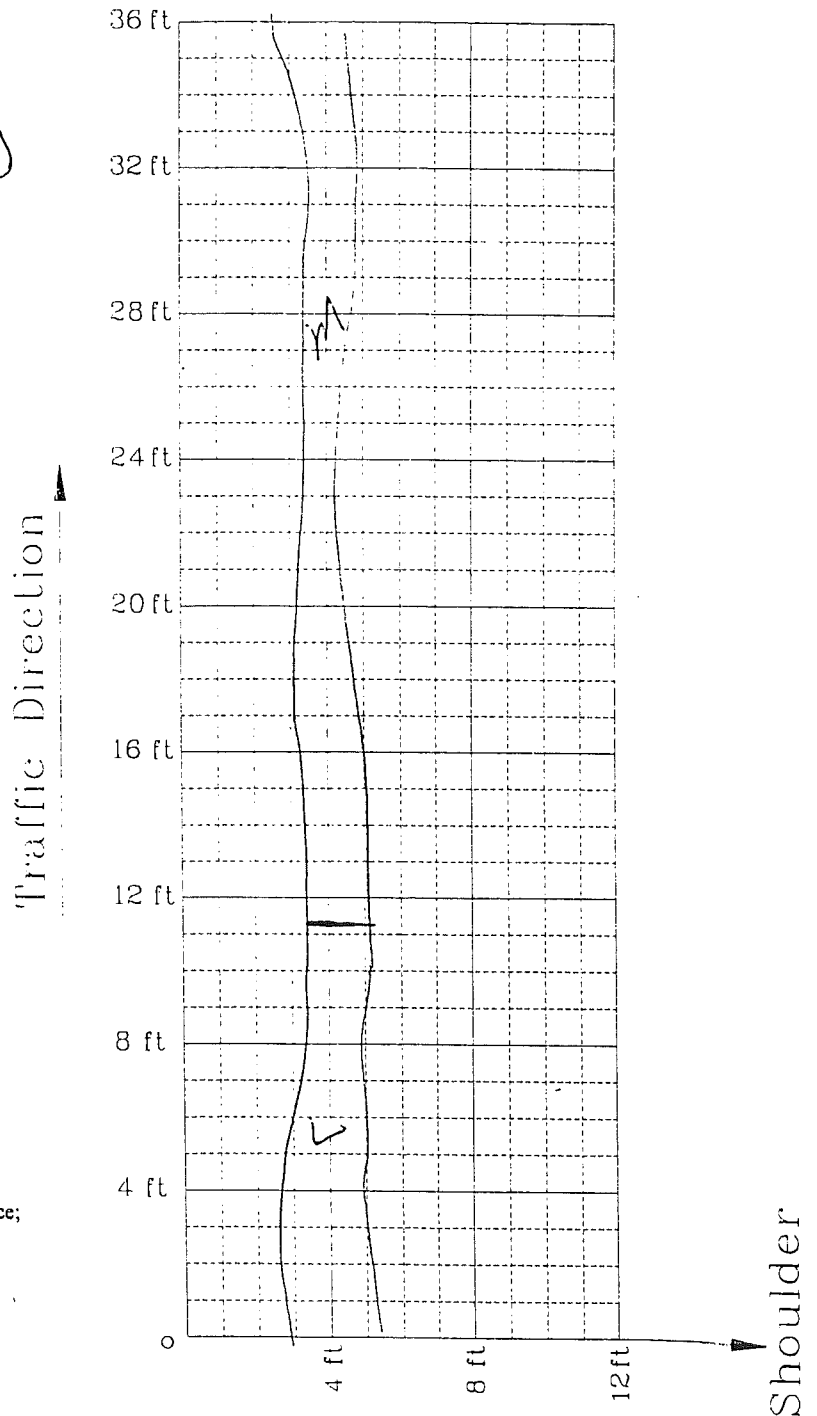
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

36° F

# Segregation Survey

Date of Survey: Dec. 3, 1997

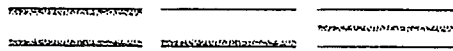
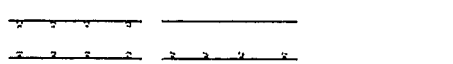

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: East  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 7 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

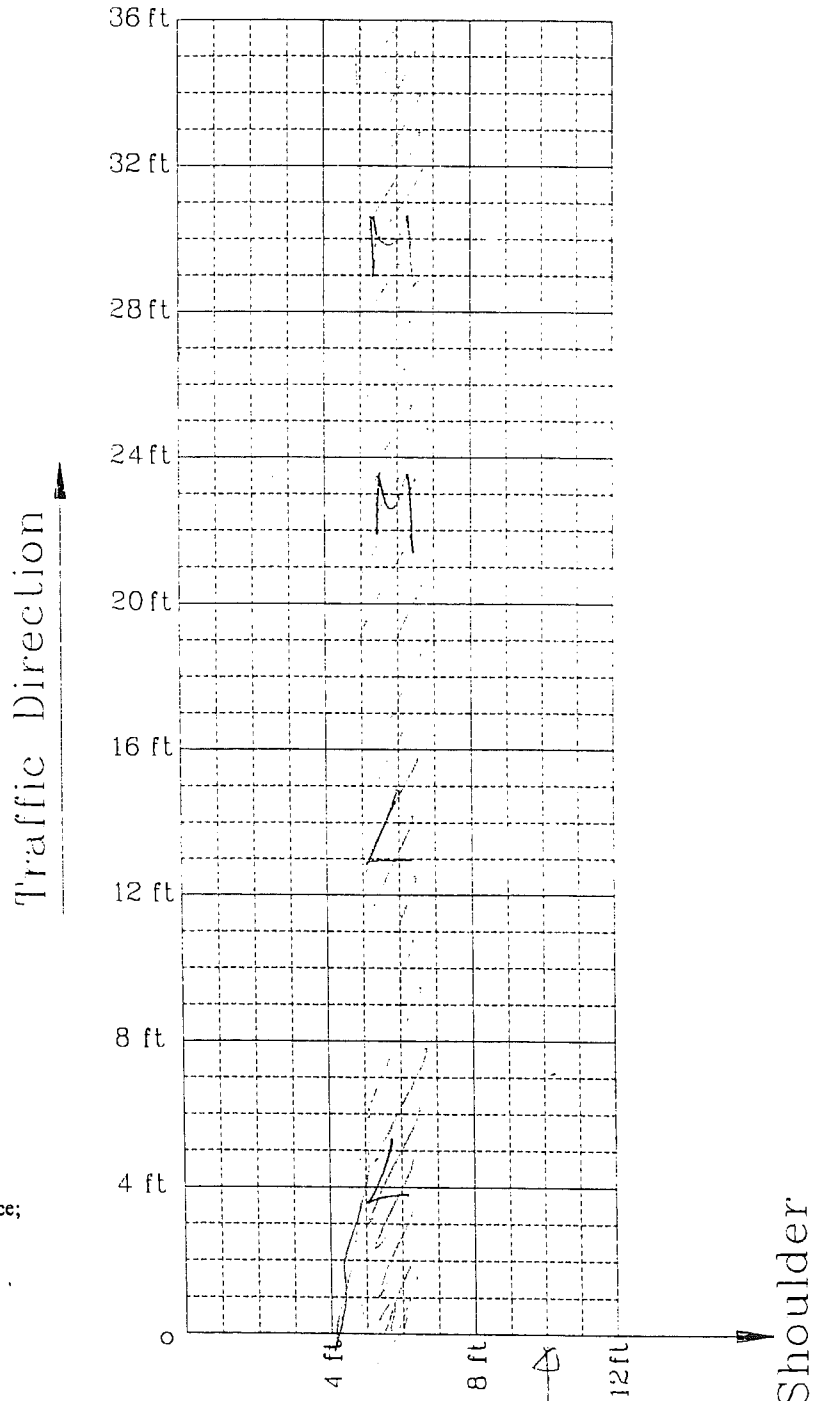
#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



## Nuclear Density Sampling Data (Jan. 30, 1998)

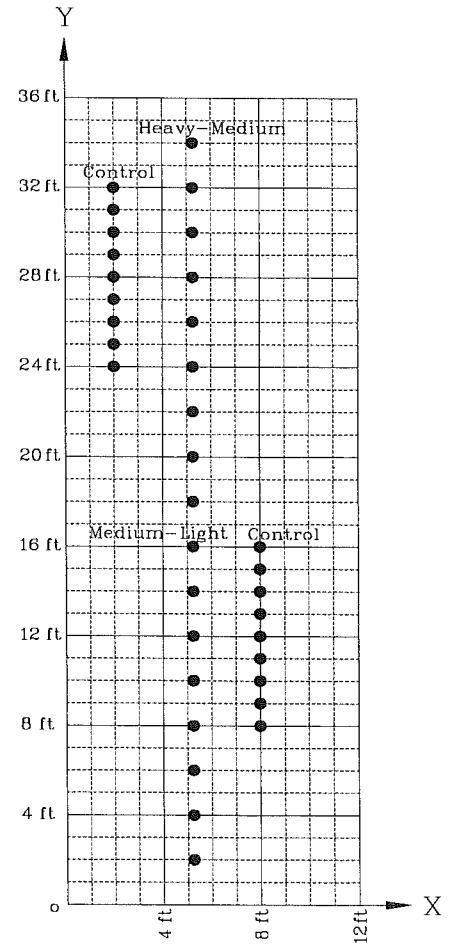
**SITE 7      Sterling Road E. Bound (300' west of Knowles road),  
Hillsdale County**

Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2847
	Moisture	673

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 4	
Control		M-H	Control		
0232	143.0	0534	135.7	0816	146.4
0231	146.9	0532	131.6	0815	146.4
0230	146.5	0530	130.1	0814	146.2
0229	146.9	0528	134.2	0813	147.3
0228	146.4	0526	133.7	0812	144.8
0227	147.3	0524	132.8	0811	146.1
0226	145.0	0522	130.9	0810	145.0
0225	146.9	0520	134.1	0809	146.4
0224	144.6	0518	136.3	0808	145.7
mean	145.9	mean	133.3	mean	146.0
std	1.43	std	2.11	std	0.77

Sample 3	
M-L	
0516	135.9
0514	136.2
0512	137.8
0510	137.0
0508	139.4
0506	138.6
0504	140.1
0502	138.7
mean	138.0
std	1.51



# Site 8

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Spurline West of Knoxville Direction: to EB  
 Region: Unit Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous    
Systematic    
Random

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

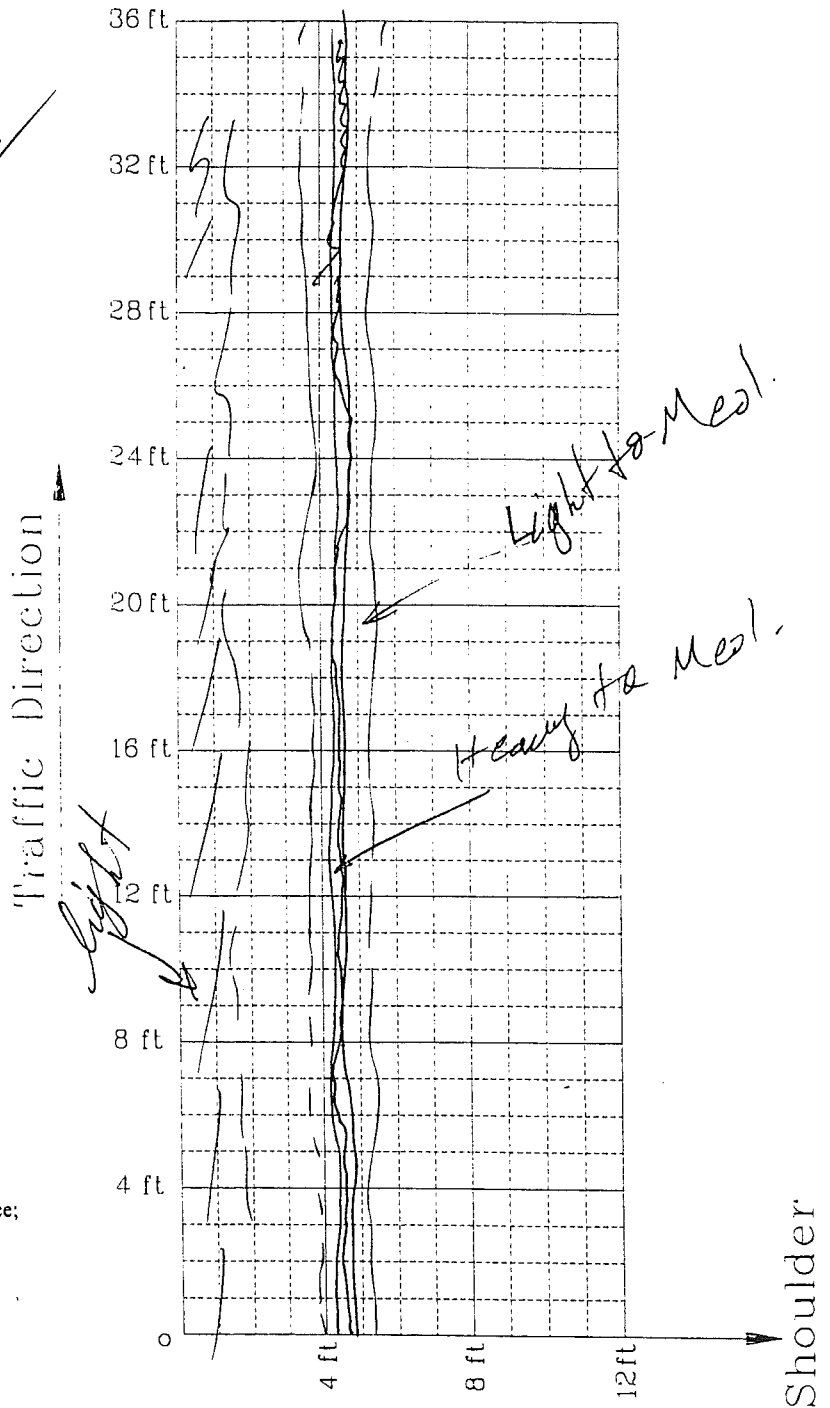
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: E. bound

Region: \_\_\_\_\_ Mile Post: from STILLWATER to KNOWLES

Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous \_\_\_\_\_  
 Systematic \_\_\_\_\_  
 Random \_\_\_\_\_

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

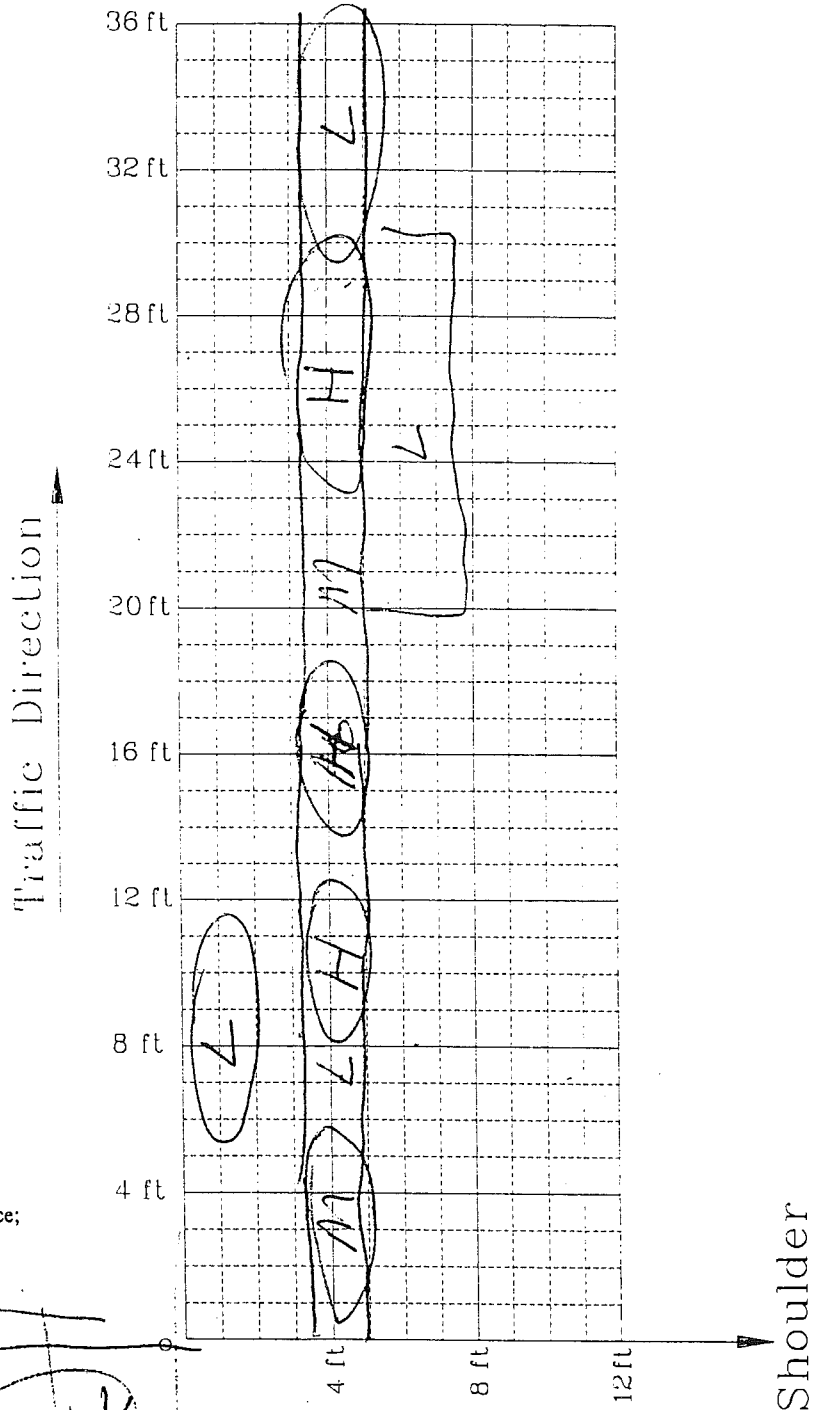
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

16  
Center

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

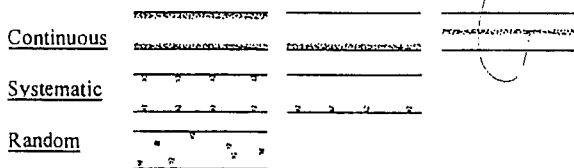
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Sterling Direction: of site 7 East  
 Region: Univ Mile Post: from 2000 West to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
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**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
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**2. Cracking**

Low       Moderate       High  
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**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

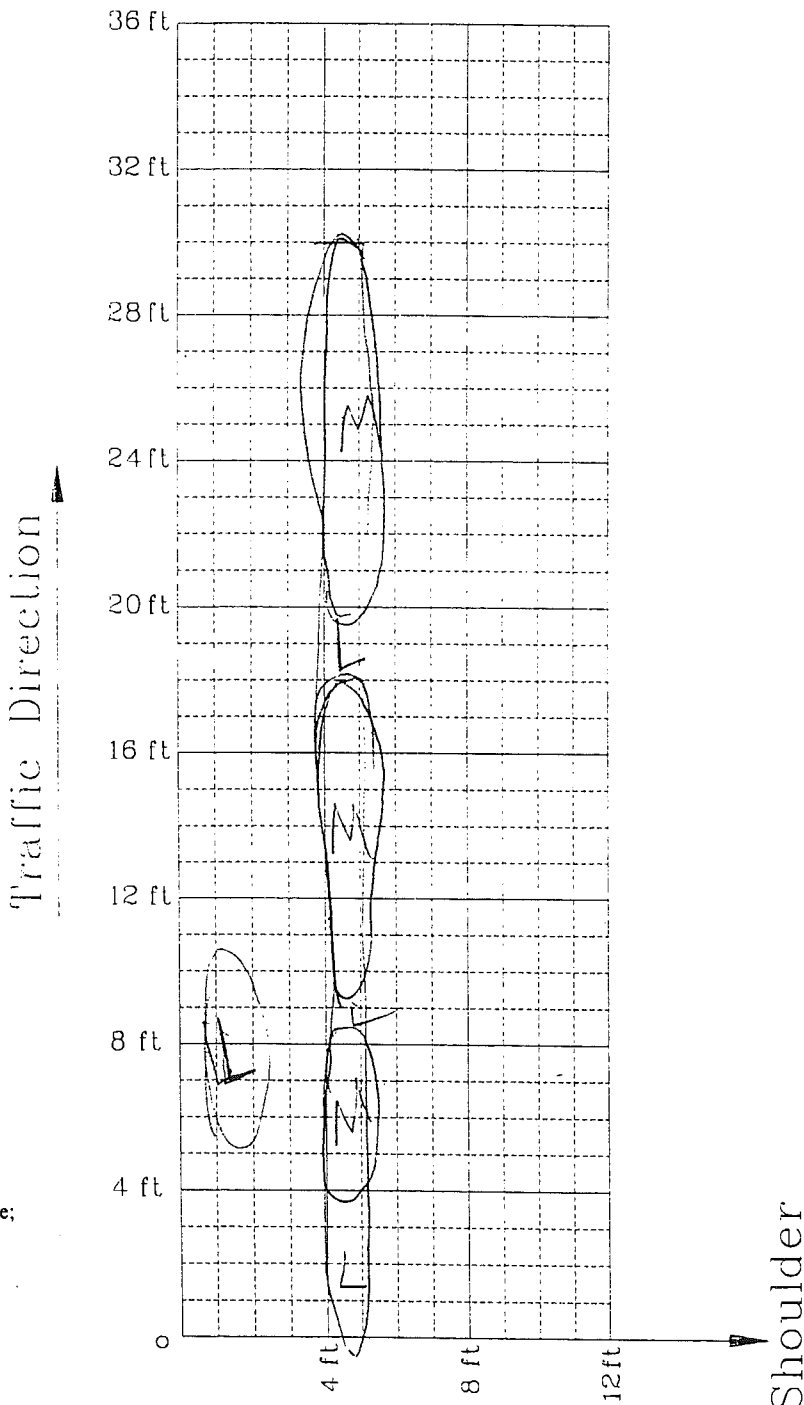
**4. Flushing**

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*Some spots heavy*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

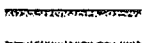
Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: ~~4~~ 4 Direction: East  
 Region: Univ Mile Post: from west of to Knower  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

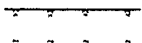
2000 ft west of 7  
**Segregation Map**

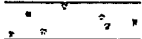
**Definition of Segregation:**

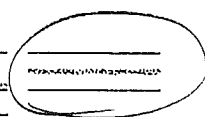
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous  \_\_\_\_\_

Systematic  \_\_\_\_\_

Random  \_\_\_\_\_



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low  Moderate  High

- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
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- Low  Moderate  High

- Low: a crack with a mean width  $\leq 0.25$  in.
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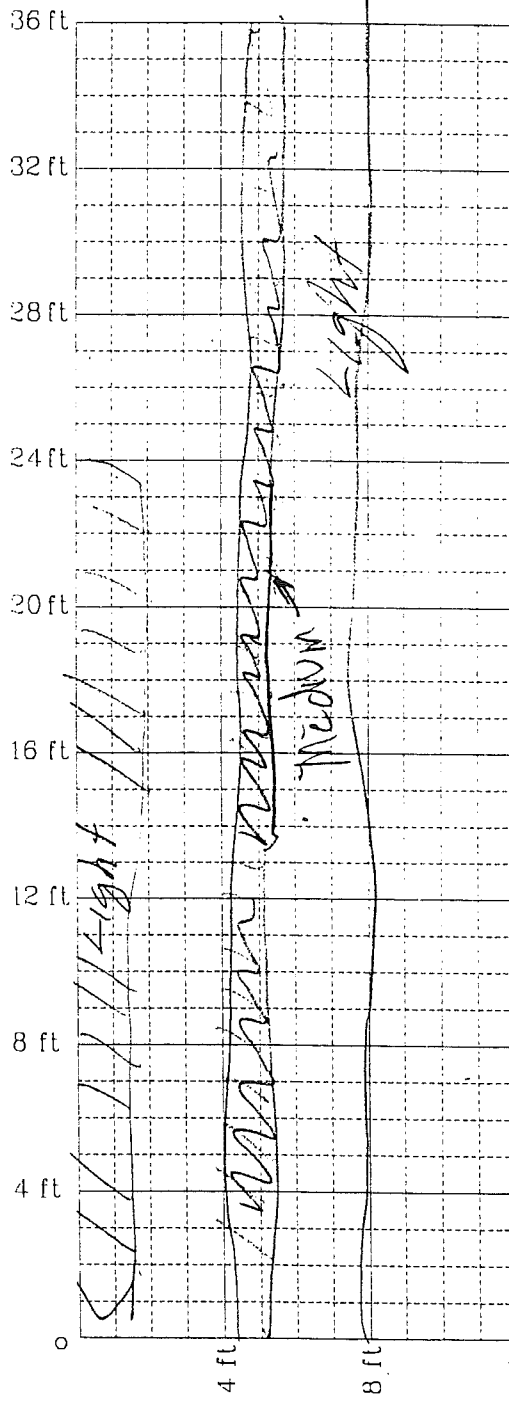
**3. Rut Depth**

**4. Flushing**

- Low  Moderate  High

- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

Traffic Direction



**COMMENTS**

Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

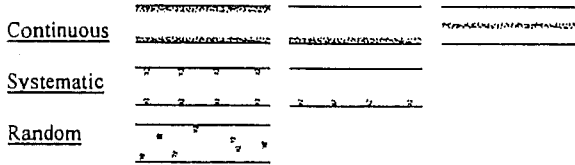
Weather:

Surveyor: \_\_\_\_\_ (your name) Stirling 2000  
 Control Section Number: \_\_\_\_\_ Route: west of road Direction: West Ed  
 Region: UNIVRSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
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**Distress to be Identified**

**1. Raveling**

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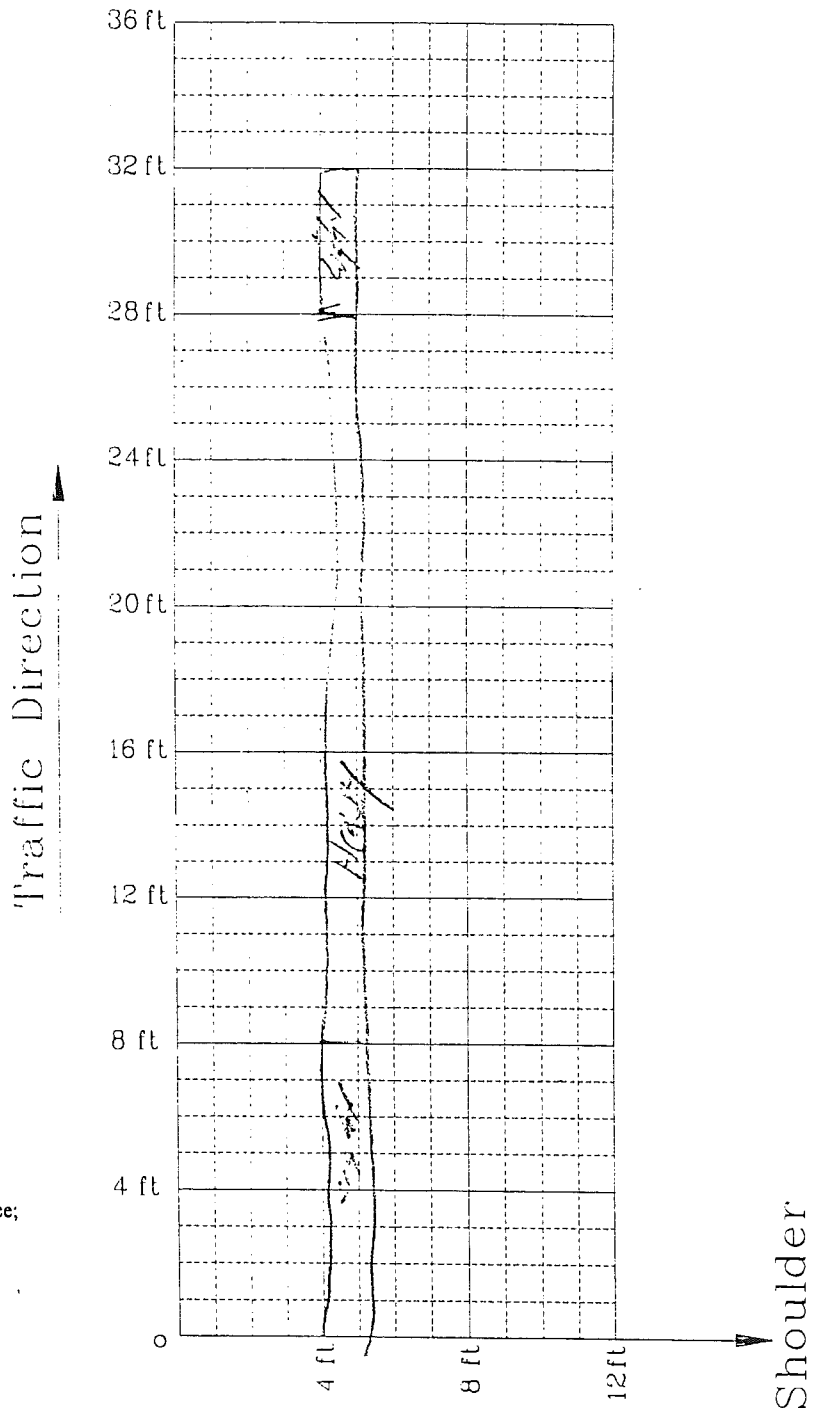
**3. Rut Depth**

**4. Flushing**

Low     Moderate     High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: Sprling

Direction: E.B. west of sites 6 & 7

Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: 1 Test Site Number: 8

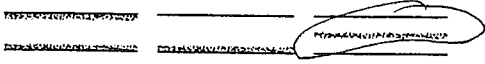
ADT: \_\_\_\_\_

## Definition of Segregation:

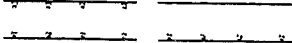
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

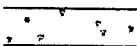
Continuous



Systematic



Random



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

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Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

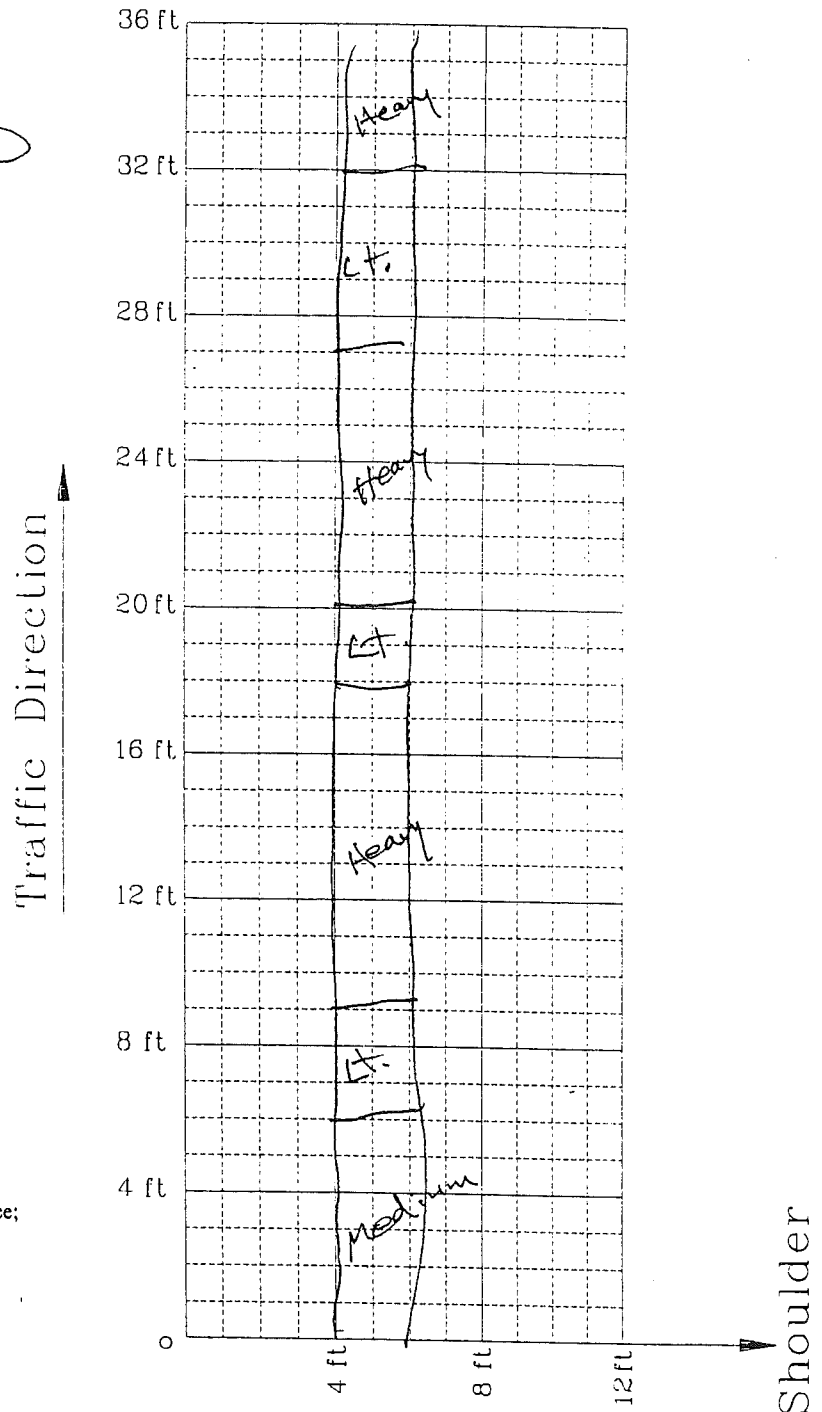
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

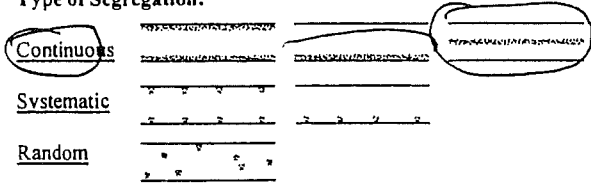
Date of Survey: Dec. 3, 1997  
 Weather: Wet, NASTY, Chilly  
Putrid

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: STERLING Direction: EAST ROAD  
 Region: JACKSON Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low       Moderate       High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low       Moderate       High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

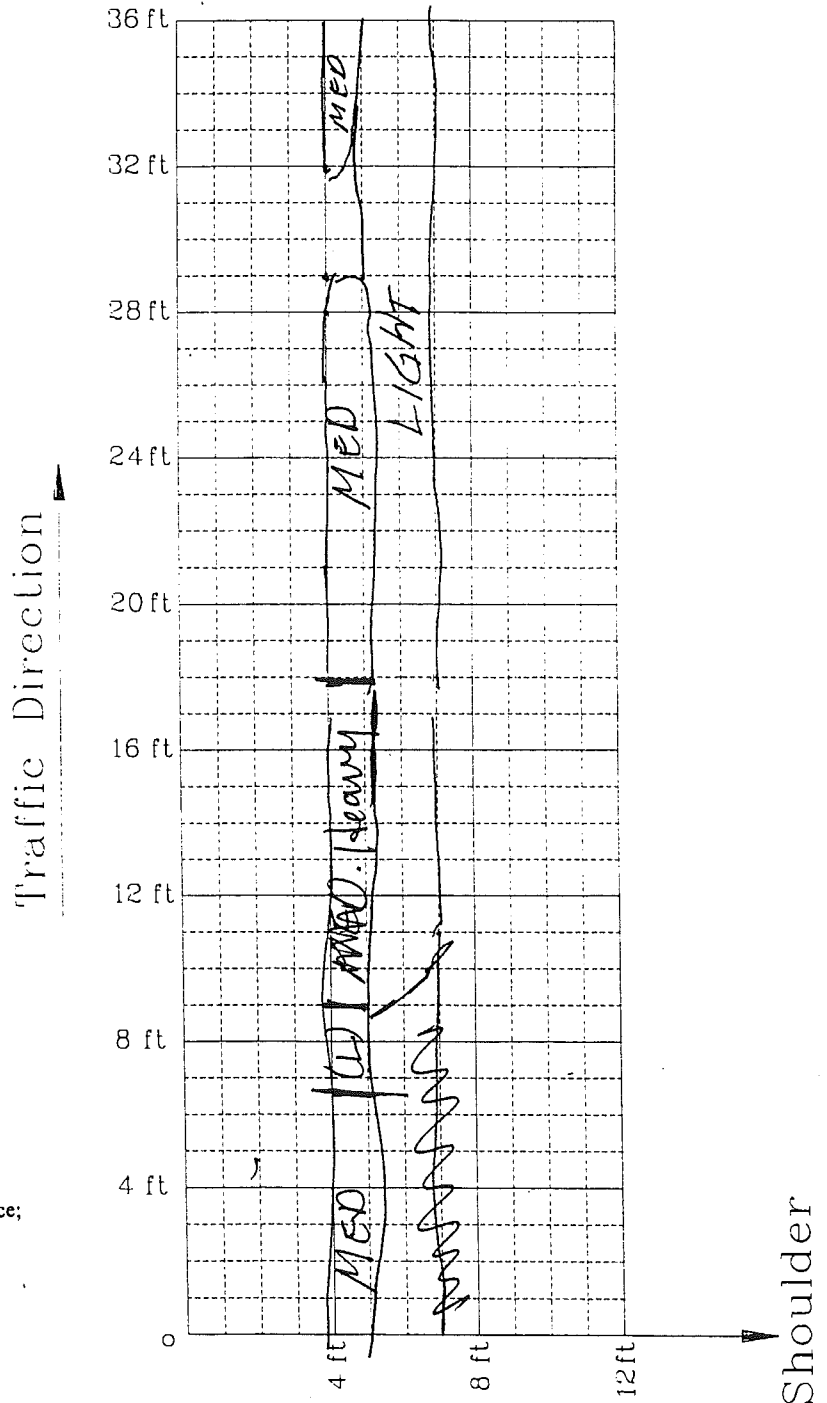
### 3. Rut Depth

### 4. Flushing

Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: Chilly Rainy 30's

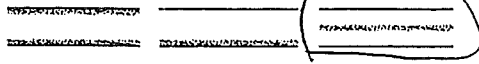
Surveyor: \_\_\_\_\_ (your name) *2000' W of Knowles*  
 Control Section Number: Hill & Dale Co. Route: Stealing Direction: EB/SB  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: #8 ADT: \_\_\_\_\_

## Definition of Segregation:

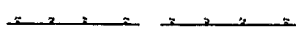
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous



Systematic



Random



*MINOR*

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

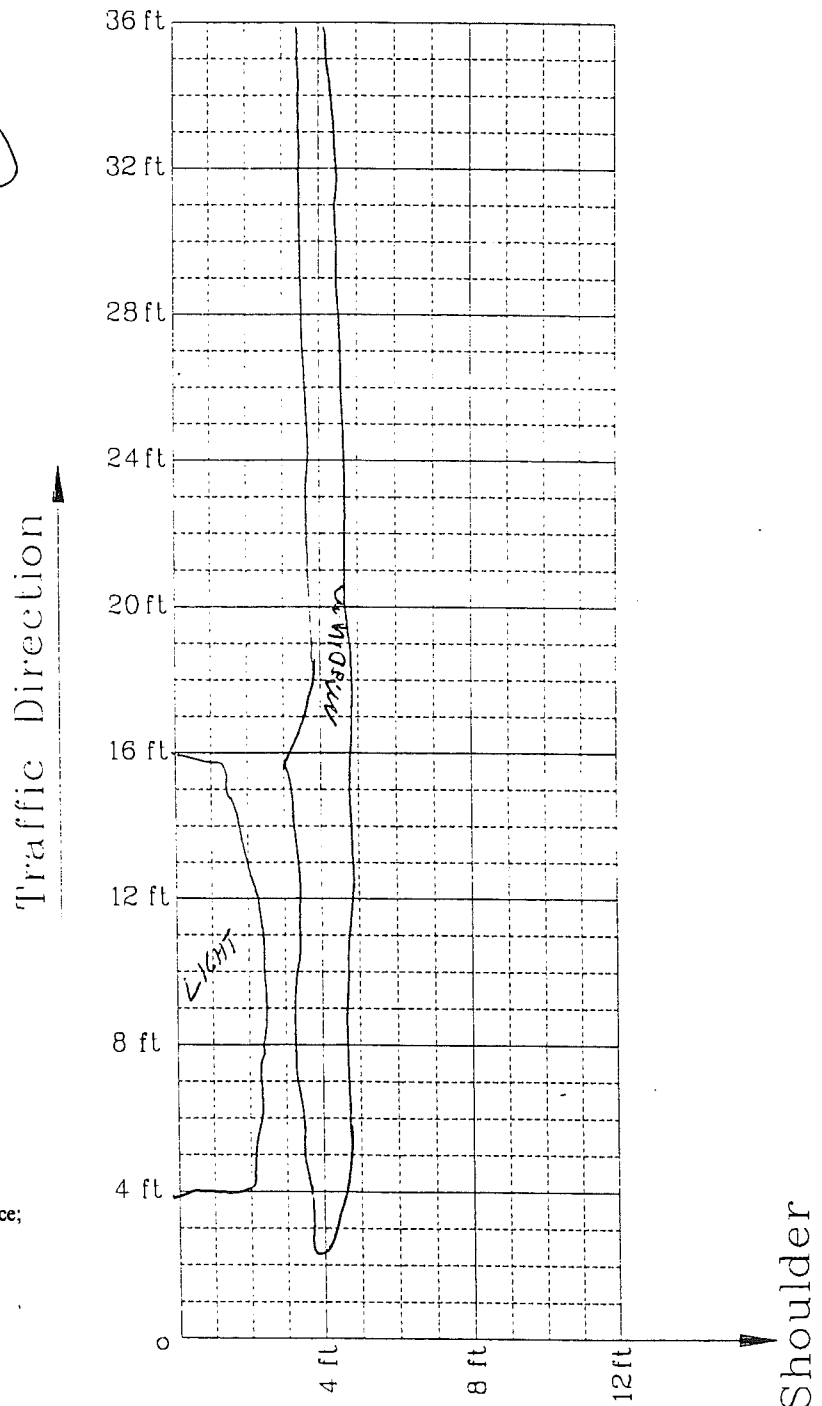
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

End of July 4-5 month

# Segregation Survey

Date of Survey: Dec. 3, 1997

Weather: cast bound  
west of

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: 0 Route: \_\_\_\_\_ Direction: \_\_\_\_\_  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 8 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High  
Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

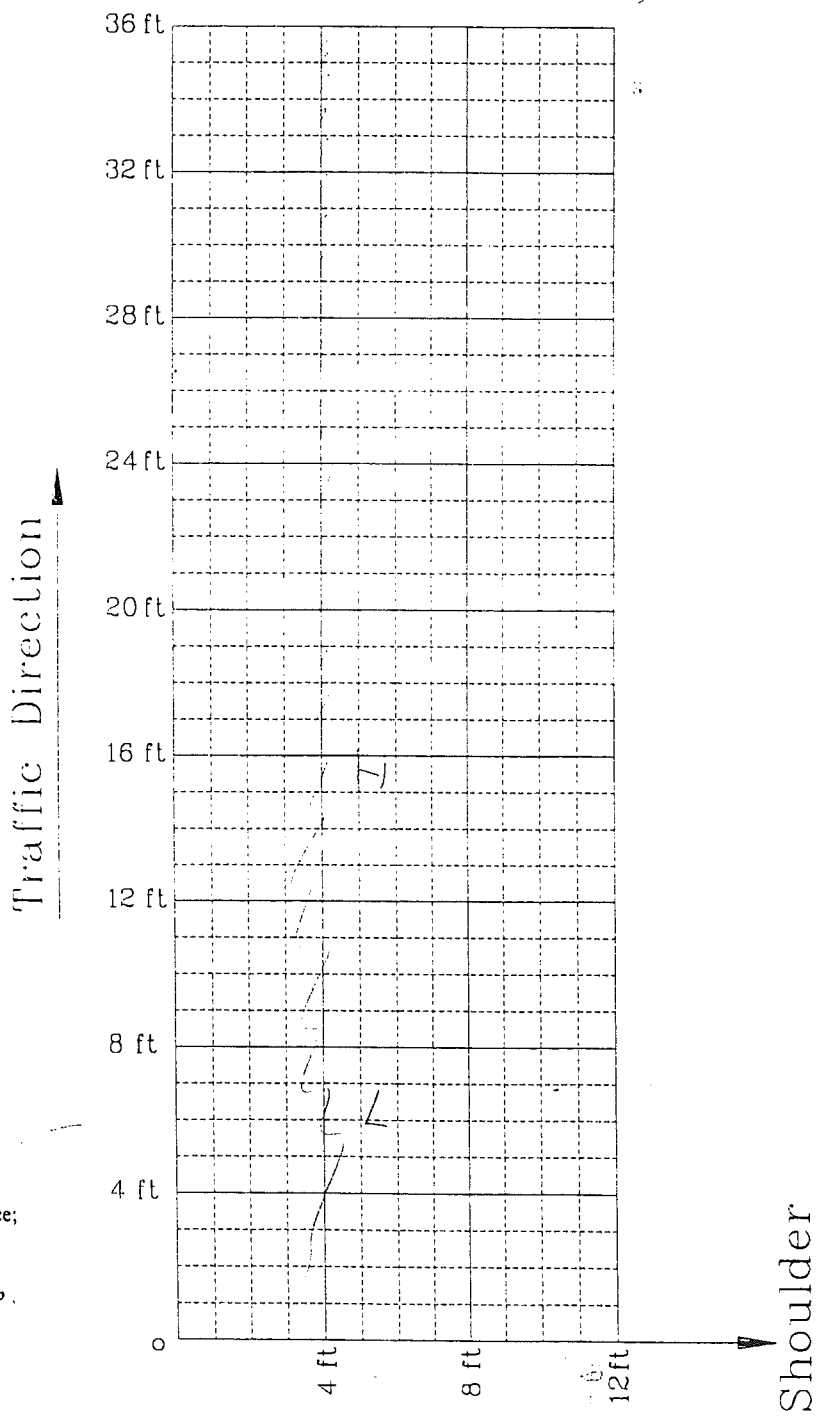
**4. Flushing**

Low       Moderate       High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*Handwritten notes and scribbles in the comments section.*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

## Nuclear Density Sampling Data (Jan. 30, 1998)

**SITE 8 Sterling Road E. Bound (2000' west of Knowles road), Hillsdale County**

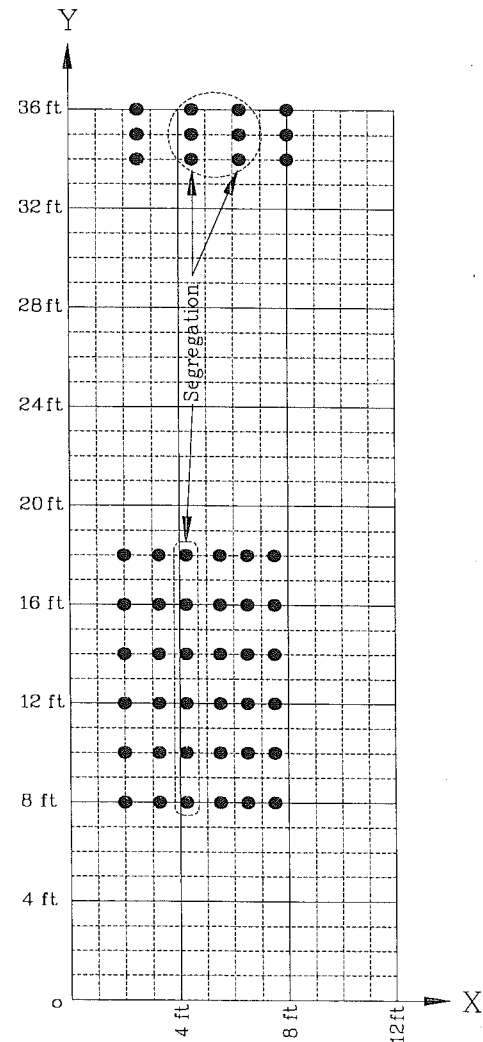
Chart Standard	Density	2853
	Moisture	660
Operating Standard	Density	2847
	Moisture	673

Gauge No.	99398
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Segregation Sample 2		Segregation Sample 3		Sample 4	
<b>0236</b>	148.9	<b>0436</b>	137.8	<b>0636</b>	143.0	<b>0836</b>	148.6
<b>0235</b>	148.6	<b>0435</b>	139.1	<b>0635</b>	141.7	<b>0835</b>	145.8
<b>0234</b>	146.1	<b>0434</b>	140.9	<b>0634</b>	142.2	<b>0834</b>	147.1
mean	147.9	mean	139.3	mean	142.3	mean	147.2
std	1.54	std	1.56	std	0.66	std	1.40

Sample 5		Segregation Sample 6		Segregation Sample 7	
<b>0218</b>	144.6	<b>0318</b>	149.2	<b>0418</b>	142.6
<b>0216</b>	144.3	<b>0316</b>	150.4	<b>0416</b>	141.4
<b>0214</b>	146.8	<b>0314</b>	149.8	<b>0414</b>	136.8
<b>0212</b>	146.5	<b>0312</b>	148.5	<b>0412</b>	139.4
<b>0210</b>	144.0	<b>0310</b>	148.5	<b>0410</b>	140.4
<b>0208</b>	142.6	<b>0308</b>	148.2	<b>0408</b>	146.2
mean	144.8	mean	149.1	mean	141.1
std	1.59	std	0.86	std	3.17

Sample 8		Sample 9		Sample 10	
<b>0518</b>	145.5	<b>0618</b>	144.1	<b>0718</b>	147.5
<b>0516</b>	144.9	<b>0616</b>	146.1	<b>0716</b>	147.7
<b>0514</b>	145.4	<b>0614</b>	145.2	<b>0714</b>	147.9
<b>0512</b>	143.6	<b>0612</b>	143.6	<b>0712</b>	148.9
<b>0510</b>	145.3	<b>0610</b>	146.2	<b>0710</b>	146.9
<b>0508</b>	145.3	<b>0608</b>	144.4	<b>0708</b>	147.9
mean	145.0	mean	144.9	mean	147.8
std	0.72	std	1.08	std	0.65



# Site 9

Paved 1996

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: Cand Rd. Direction: NB

Region: \_\_\_\_\_ Mile Post: from West of Delta elementary

Section Number: \_\_\_\_\_ Test Site Number: 9 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

<u>Continuous</u>			
<u>Systematic</u>			
<u>Random</u>			

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High

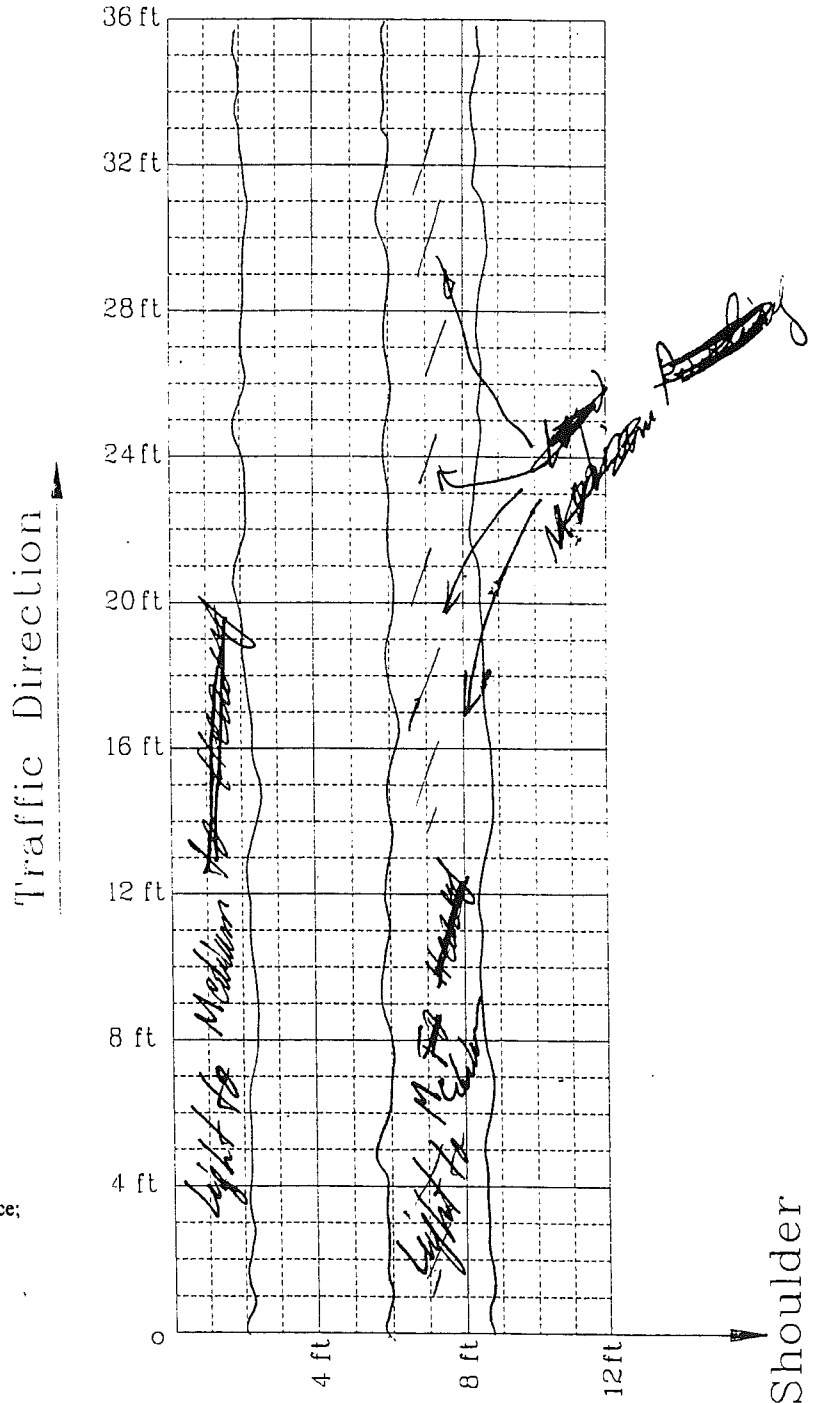
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: FRONT OF SCHOOL Route: CANAL Direction: NORTH  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 9 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous

Systematic

Random

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distresses to be Identified

#### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

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#### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

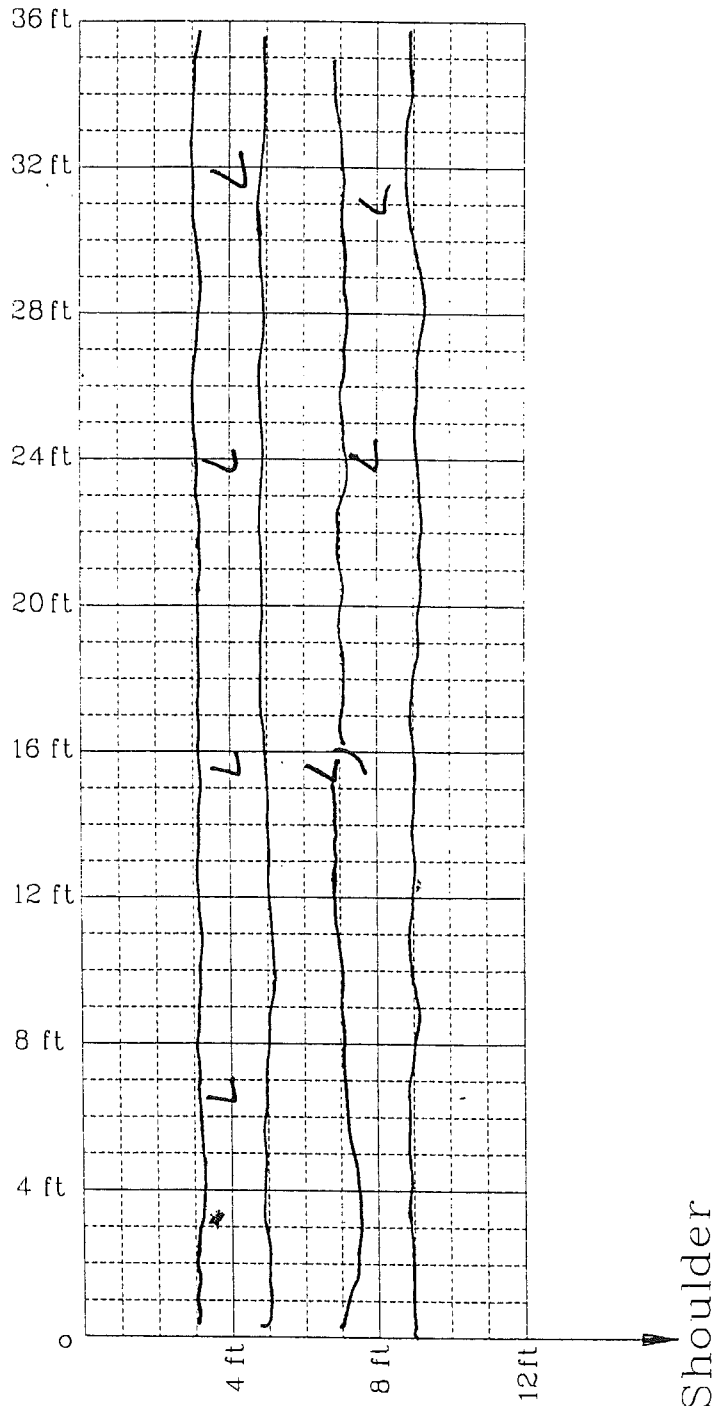
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name) 0ANAL Rd  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: NBS  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 9 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

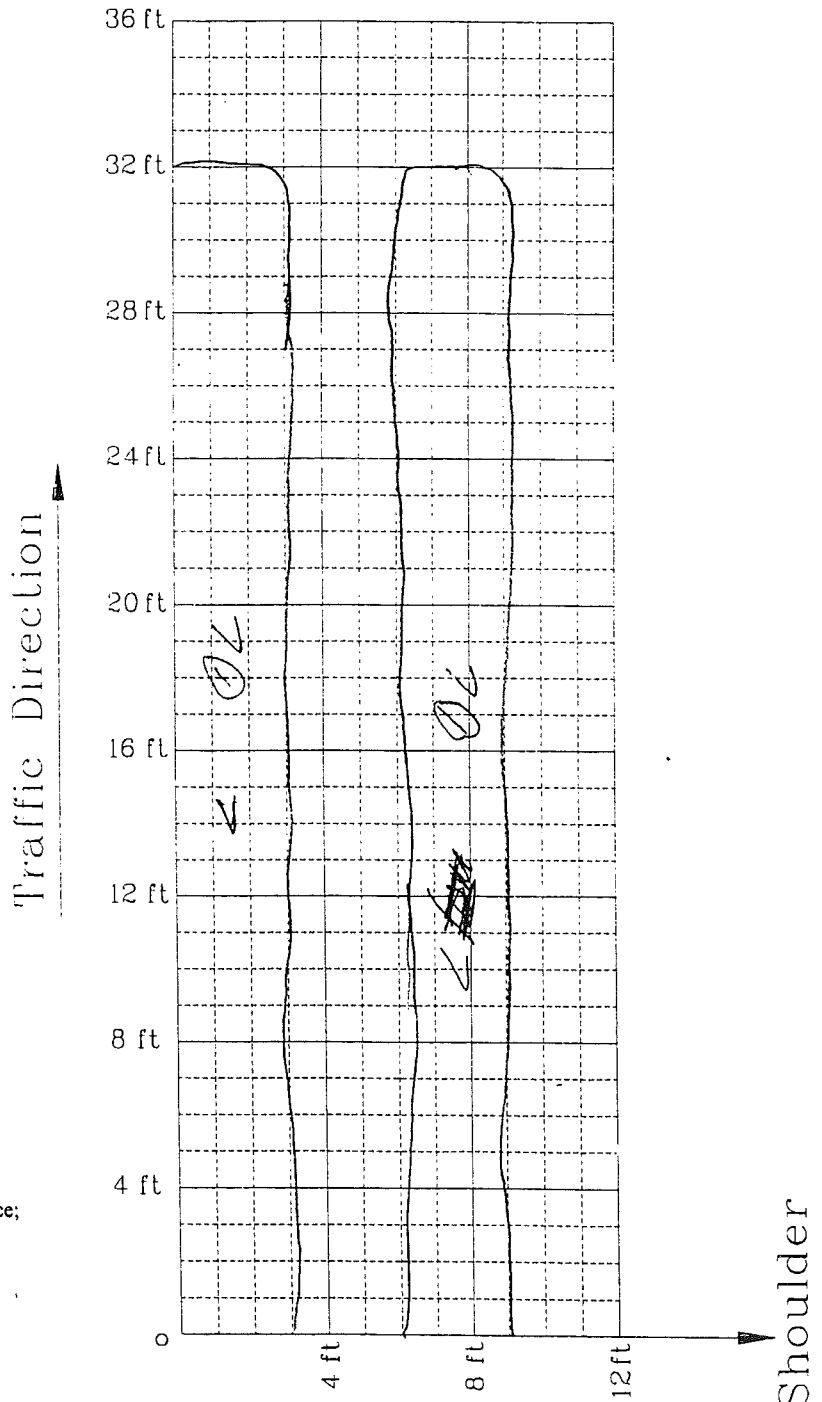
**4. Flushing**

Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 9, 1997

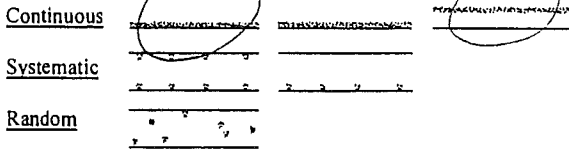
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: Canal NB Direction: North  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: Delta Center School Test Site Number: 9 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**

Low  Moderate  High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

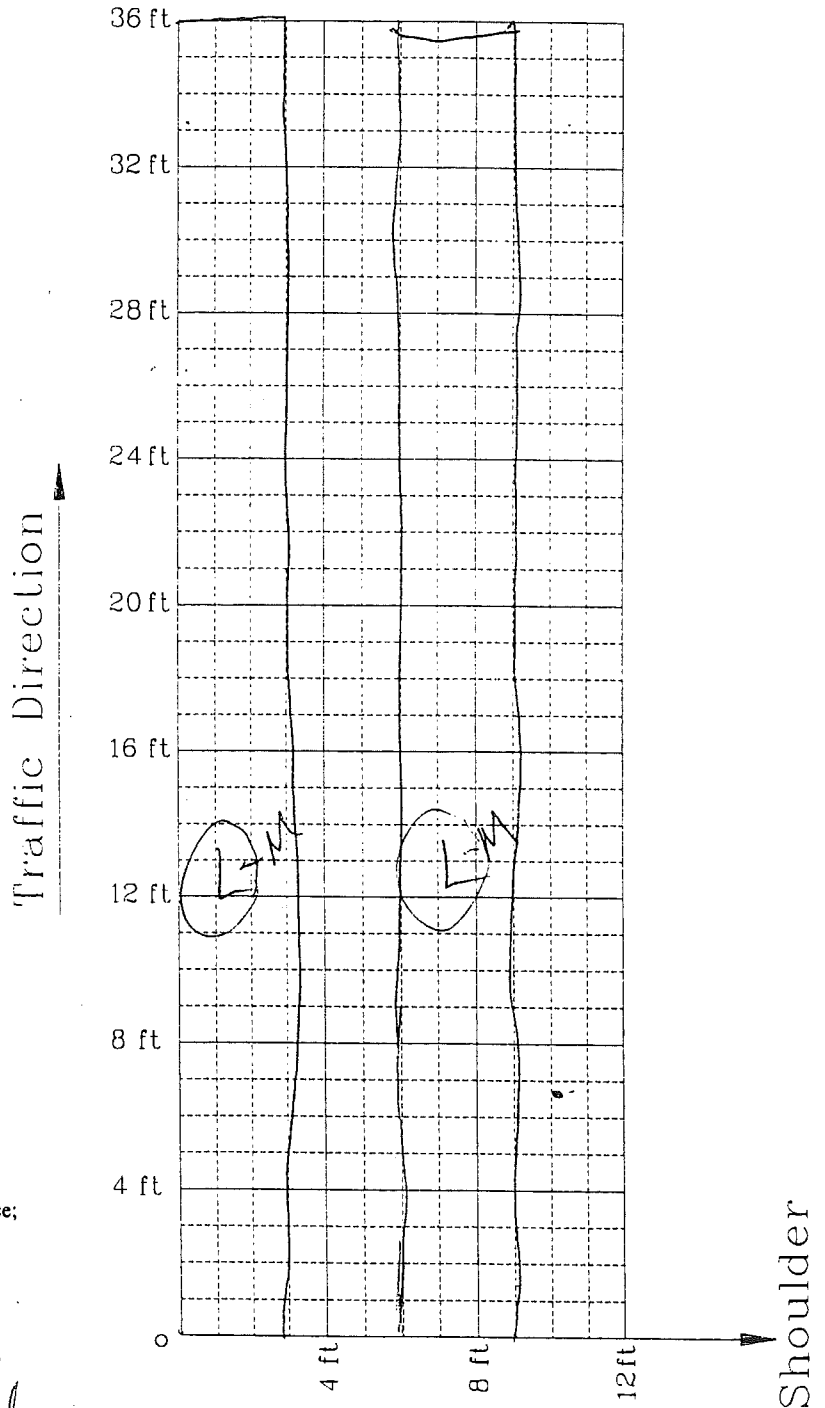
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

\* Several spots where stones have popped out

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

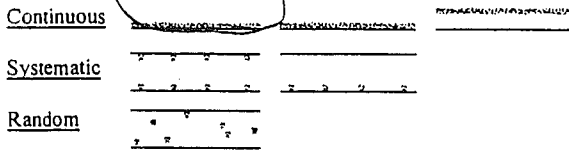
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: CANA 1 Rd Direction: N  
 Region: 8 University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 9 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy:** stone against stone, little or no matrix (fine)
- Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low     Moderate     High
- Low:** aggregate or binder has started to wear away, but not progressed significantly
- Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking** *None Yet*

- Low     Moderate     High
- Low:** a crack with a mean width  $\leq 0.25$  in.
- Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

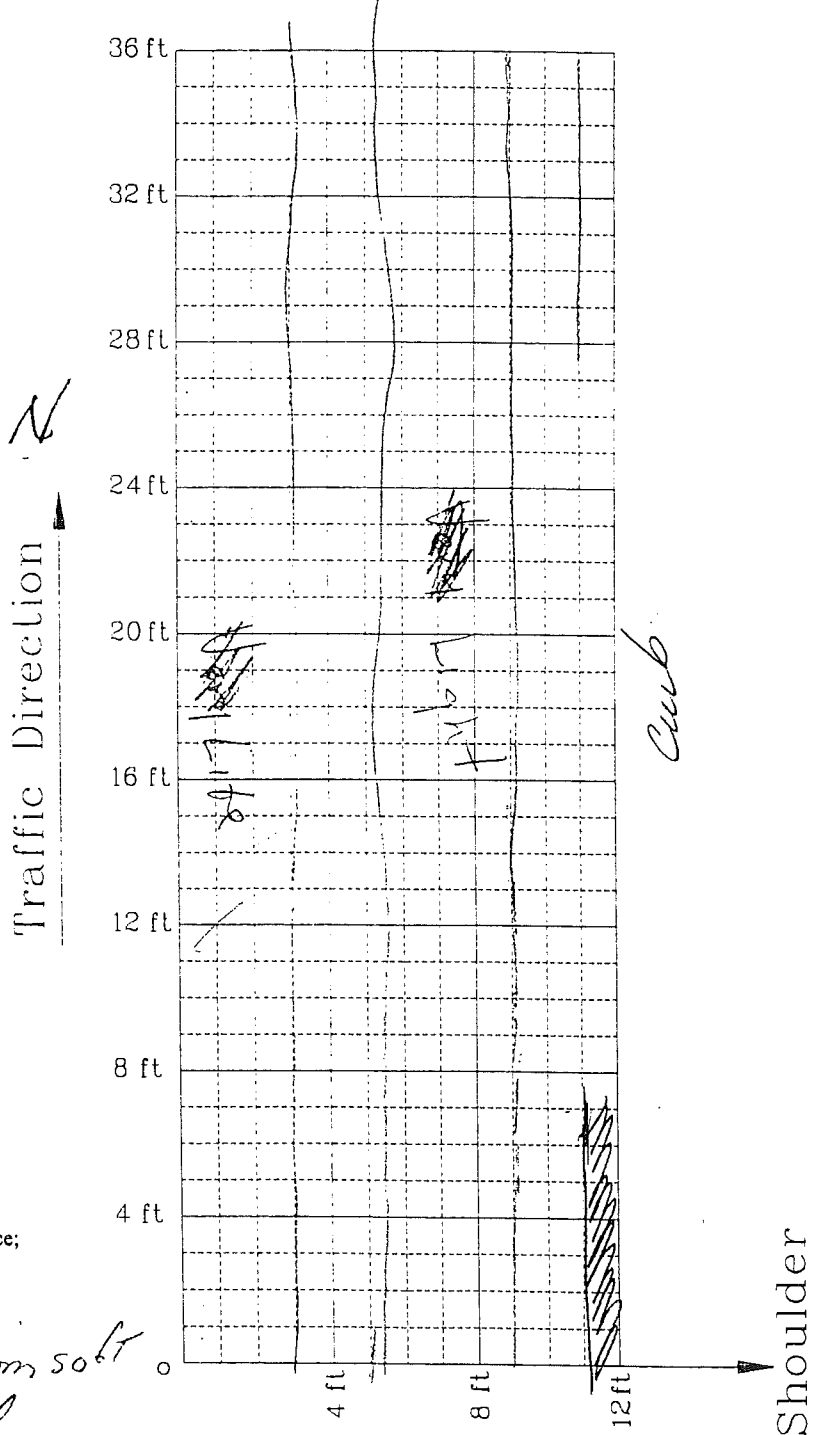
**3. Rut Depth** *None Yet*

- Low     Moderate     High
- Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt
- High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*11' part. Popouts from soft stone have been pealed  
 Full depth on gravel.*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997  
 Weather: Overcast 30s

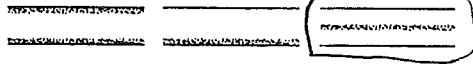
Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: GRAN CO. Route: CANAL Direction: NR RT LANE  
 Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 49 ADT: \_\_\_\_\_

### Definition of Segregation:

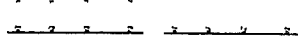
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous



Systematic



Random



### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling NONE

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

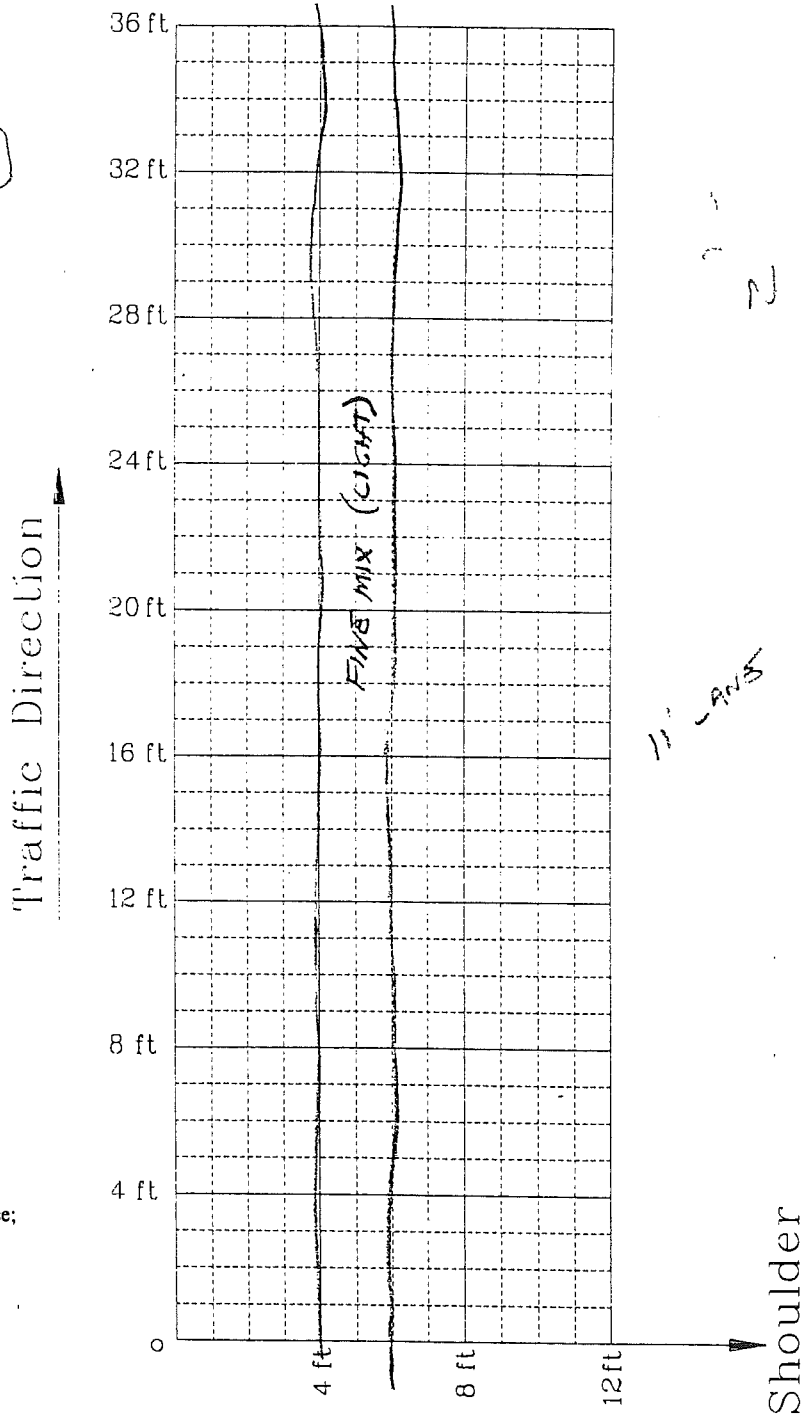
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

MAKES A CASE FOR NONE  
NOT VERY DISTINGUISHABLE  
NOTICEABLE STONE POPOUTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

33° F

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: CANAL Direction: N13

Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: 9 ADT: \_\_\_\_\_

*ant. 1/2 in.*

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

<u>Continuous</u>	
<u>Systematic</u>	
<u>Random</u>	

### Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

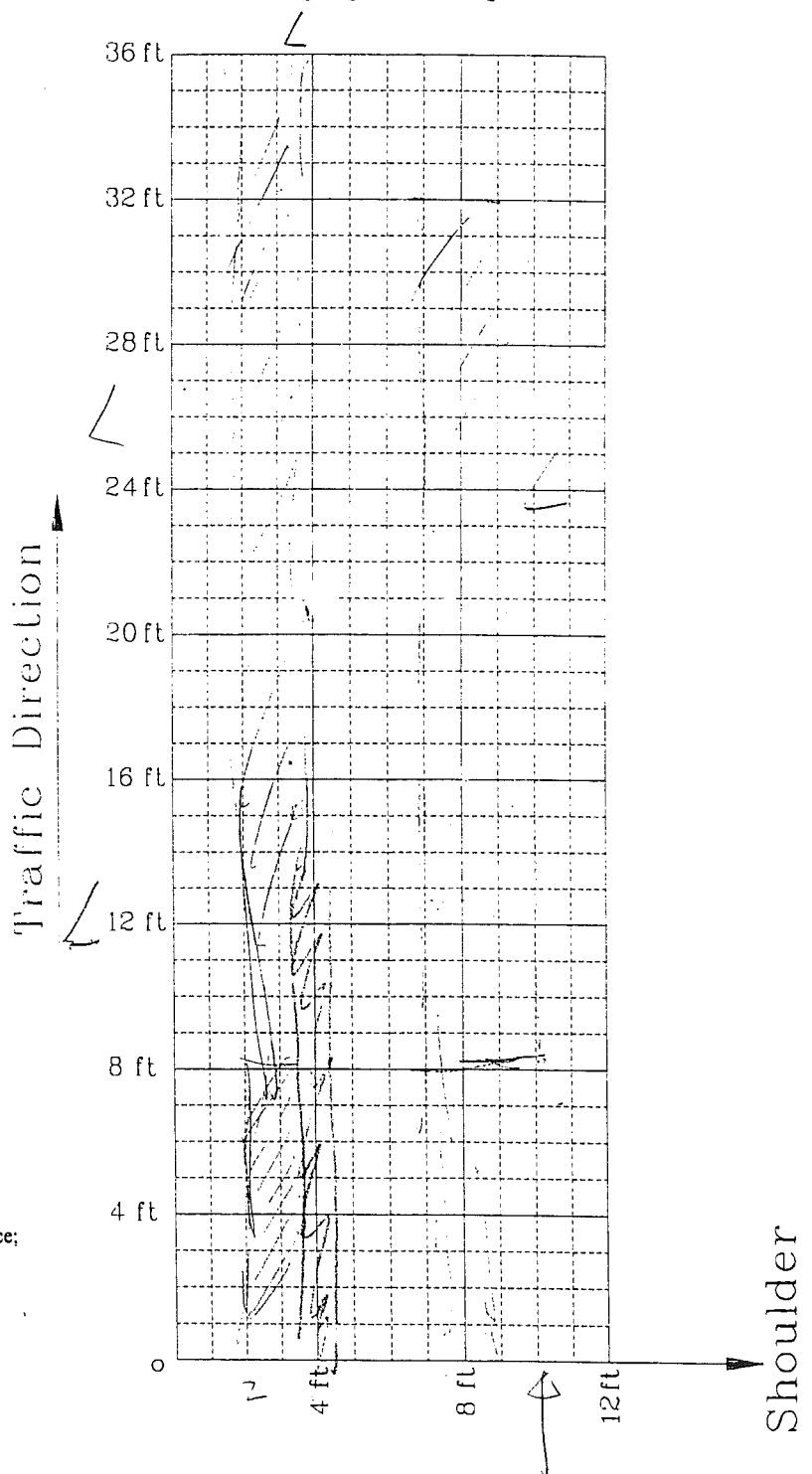
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

## Nuclear Density Sampling Data (Feb. 13, 1998)

**SITE 9**      **Canal Road N. Bound (in front of Delta Center School),  
Eaton County**

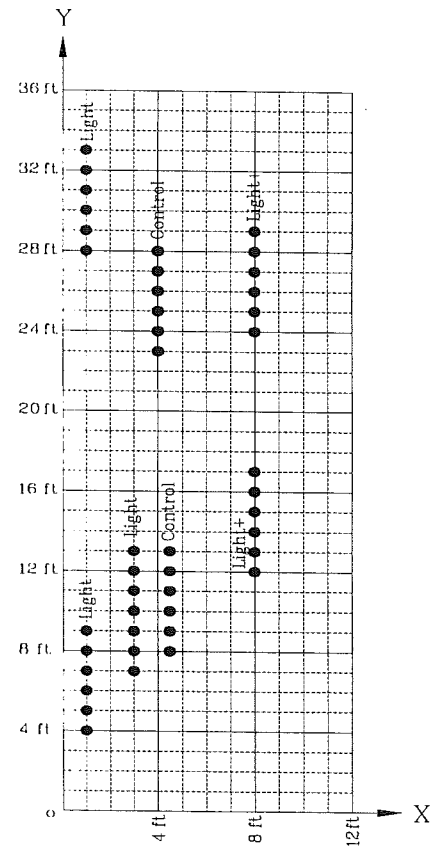
Chart Standard	Density	2617
	Moisture	705
Operating Standard	Density	2608
	Moisture	708

Gauge No.	102420
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 3	
Light		Control		Light +	
0133	145.6	0428	144.4	0829	142.5
0132	144.9	0427	146.2	0828	142.6
0131	145.4	0426	143.0	0827	142.8
0130	144.2	0425	148.6	0826	143.3
0129	145.7	0424	140.5	0825	142.3
0128	144.2	0423	140.1	0824	141.7
mean	145.0	mean	143.8	mean	142.5
std	0.68	std	3.30	std	0.53

Sample 4		Sample 5	
Light		Light	
0109	143.0	0313	138.6
0108	141.3	0312	141.2
0107	142.3	0311	142.0
0106	142.5	0310	142.6
0105	144.4	0309	142.2
0104	143.9	0308	143.4
mean	142.9	mean	141.4
std	1.13	std	1.65

Sample 6		Sample 7	
Control		Light +	
0413	139.2	0817	142.7
0412	139.5	0816	141.7
0411	142.7	0815	142.3
0410	140.9	0814	142.8
0409	140.0	0813	142.3
0408	142.1	0812	143.0
mean	140.7	mean	142.5
std	1.43	std	0.47



# Site 10

Traffic Lane

# Segregation Survey

Paved 1996

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: Canal Rd. Direction: SB

Region: To Mile Post: from Across from AAA Michigan

Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

South of West of State Rd.  
Segregation Map

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous \_\_\_\_\_

Systematic \_\_\_\_\_

Random \_\_\_\_\_

### Degree of Segregation

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

- Low     Moderate     High

- Low: aggregate or binder has started to wear away, but not progressed significantly
  - Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
  - High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate
- #### 2. Cracking
- Low     Moderate     High
- Low: a crack with a mean width  $\leq 0.25$  in.
  - Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
  - High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

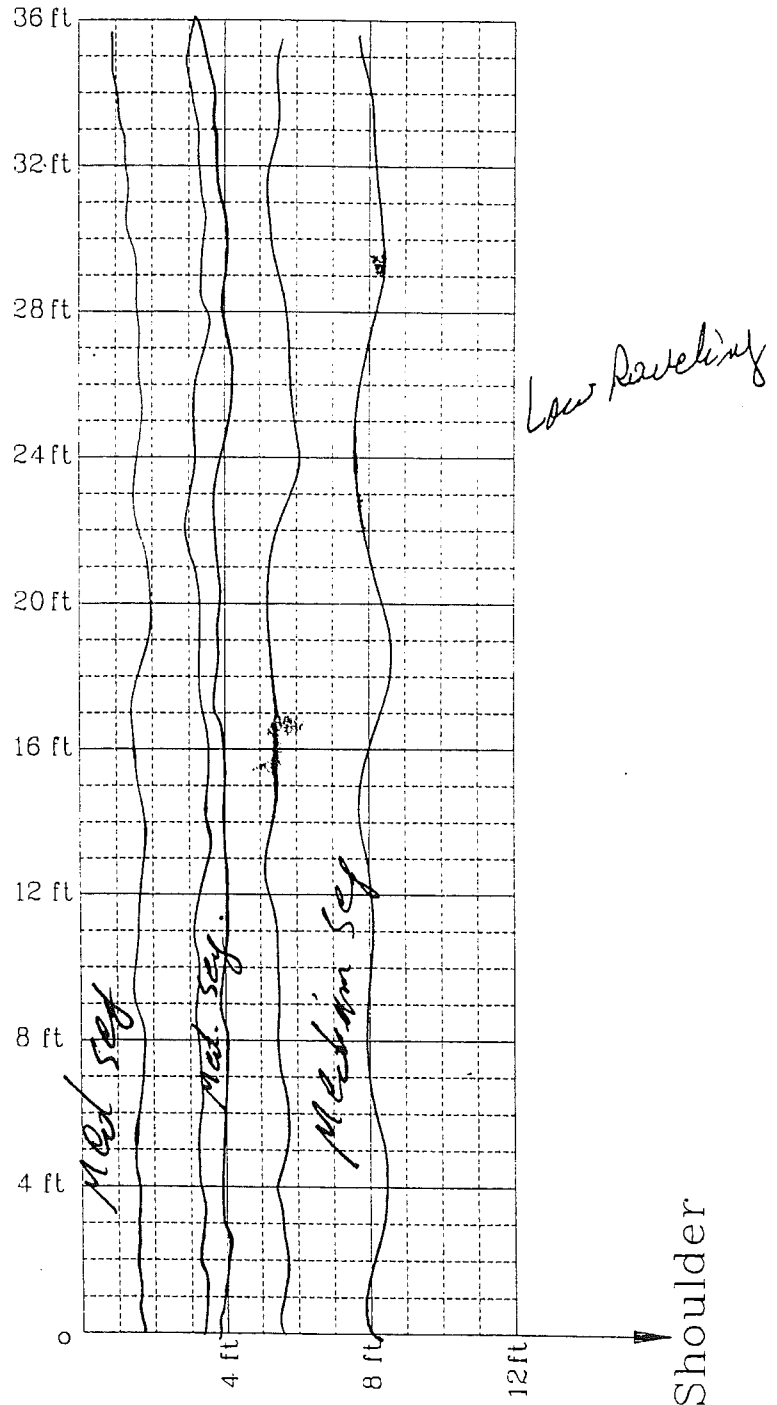
- Low     Moderate     High

- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

*The raveling may be caused by soft aggregate*

Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: CANAL Direction: SOUTH  
 Region: IN FRONT OF NAA Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

PORT 96 SOUTH OF WEST SHOULDER  
**Segregation Map**

**Definition of Segregation:**  
 Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**  
Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

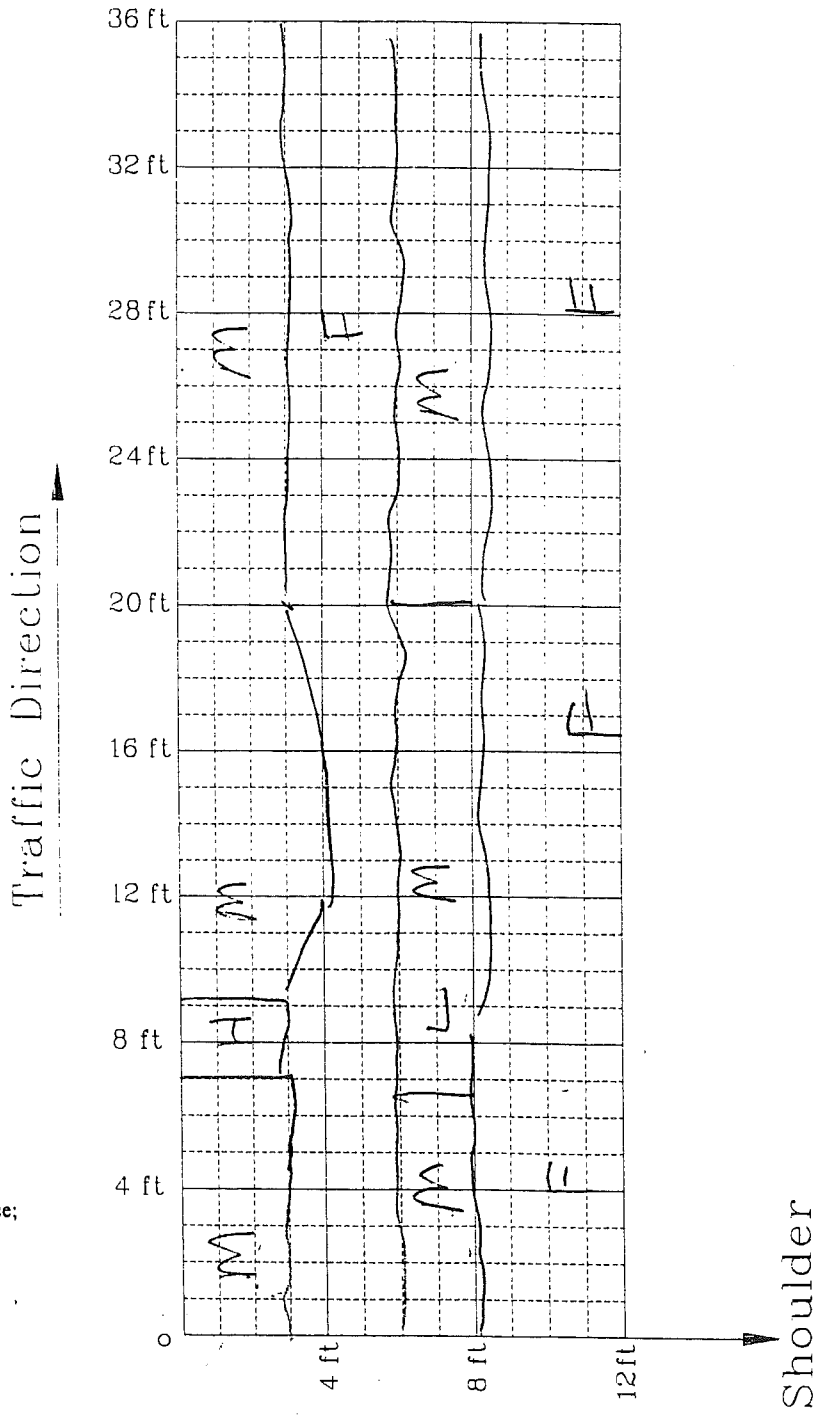
**1. Raveling**  
 Low     Moderate     High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
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High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**  
 Low     Moderate     High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

COMMENTS



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



11/10/97

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name) CANAL Rd  
 Control Section Number: \_\_\_\_\_ Route: 507th of Wayne Direction: South  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

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Low  Moderate  High

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#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

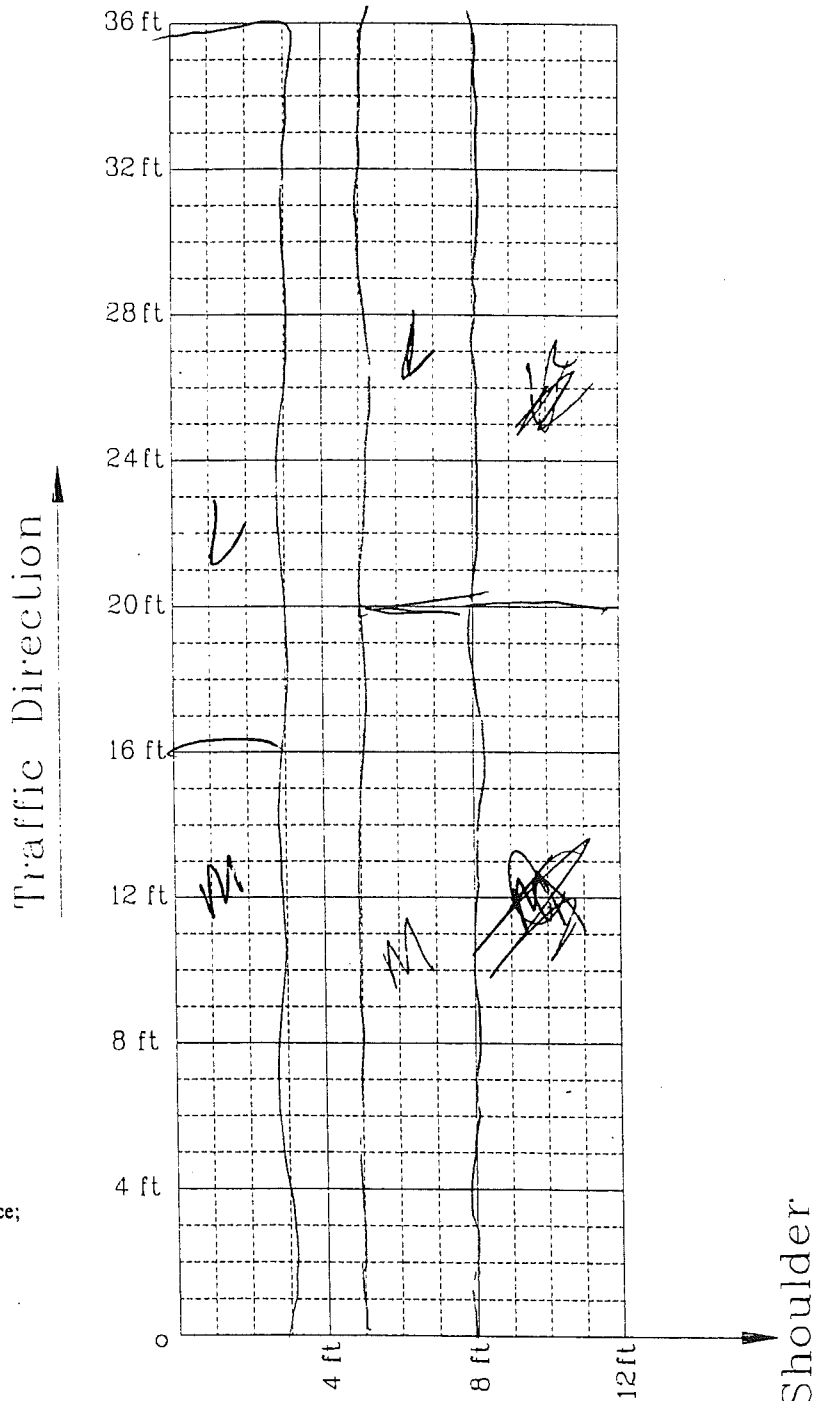
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### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

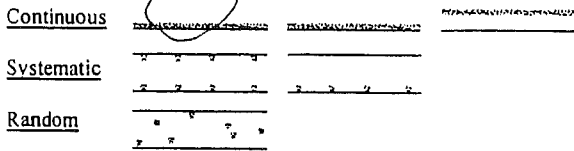
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: CANAL Direction: South  
 Region: Unw Mile Post: from West shore to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

**Heavy**: stone against stone, little or no matrix (fine)  
**Medium**: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
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**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

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Low  Moderate  High

**Low**: a crack with a mean width  $\leq 0.25$  in.  
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**3. Rut Depth**

**4. Flushing**

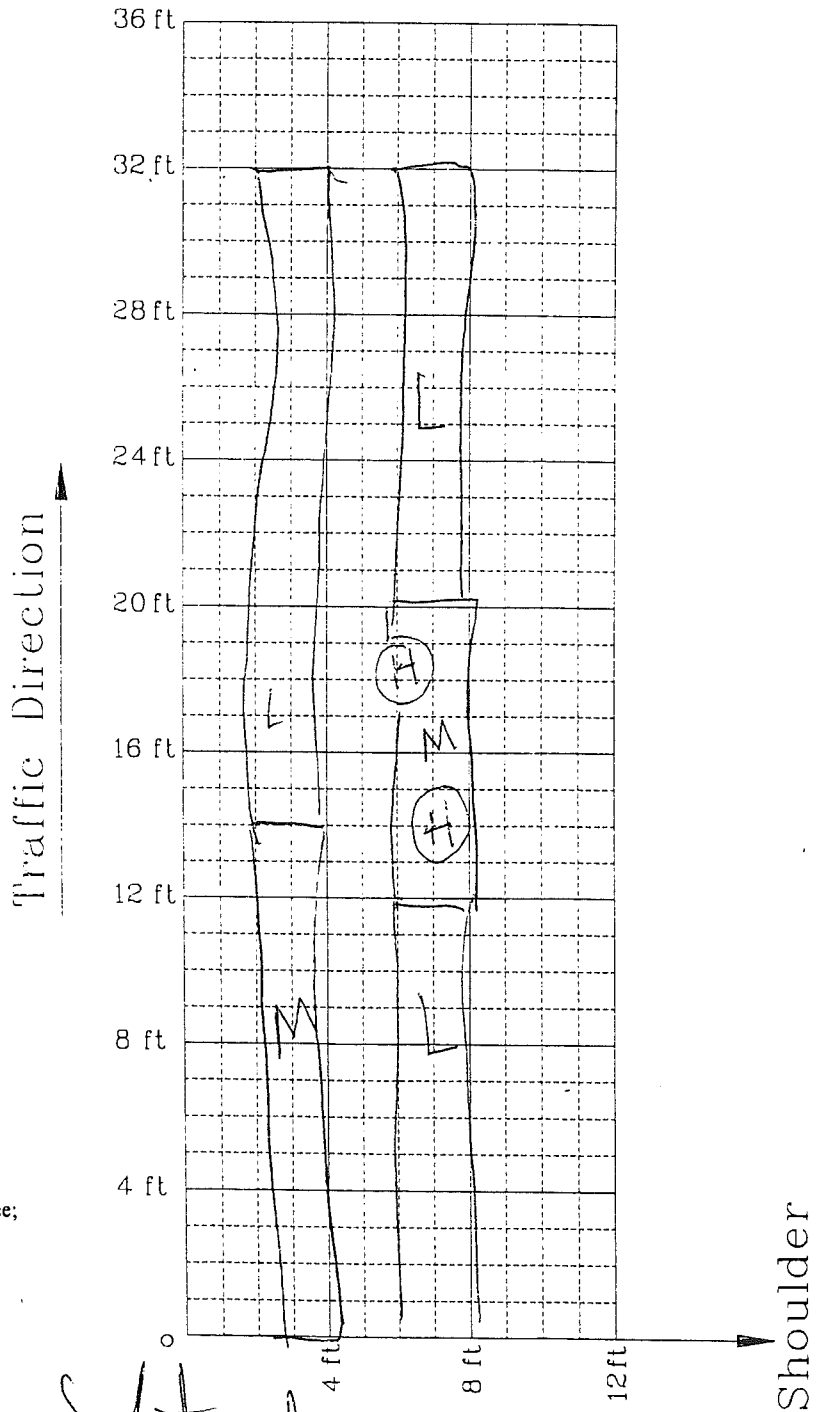
Low  Moderate  High

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**COMMENTS**

\* Popouts due to soft stone

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997  
Weather: 32°F, Smoky.

Surveyor: \_\_\_\_\_ (your name)  
Control Section Number: \_\_\_\_\_ Route: CANAL Rd Direction: SB  
Region: UNIVERSITY Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous** \_\_\_\_\_  
**Systematic** \_\_\_\_\_  
**Random** \_\_\_\_\_

### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
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### Distress to be Identified

#### 1. Raveling

Low       Moderate       High  
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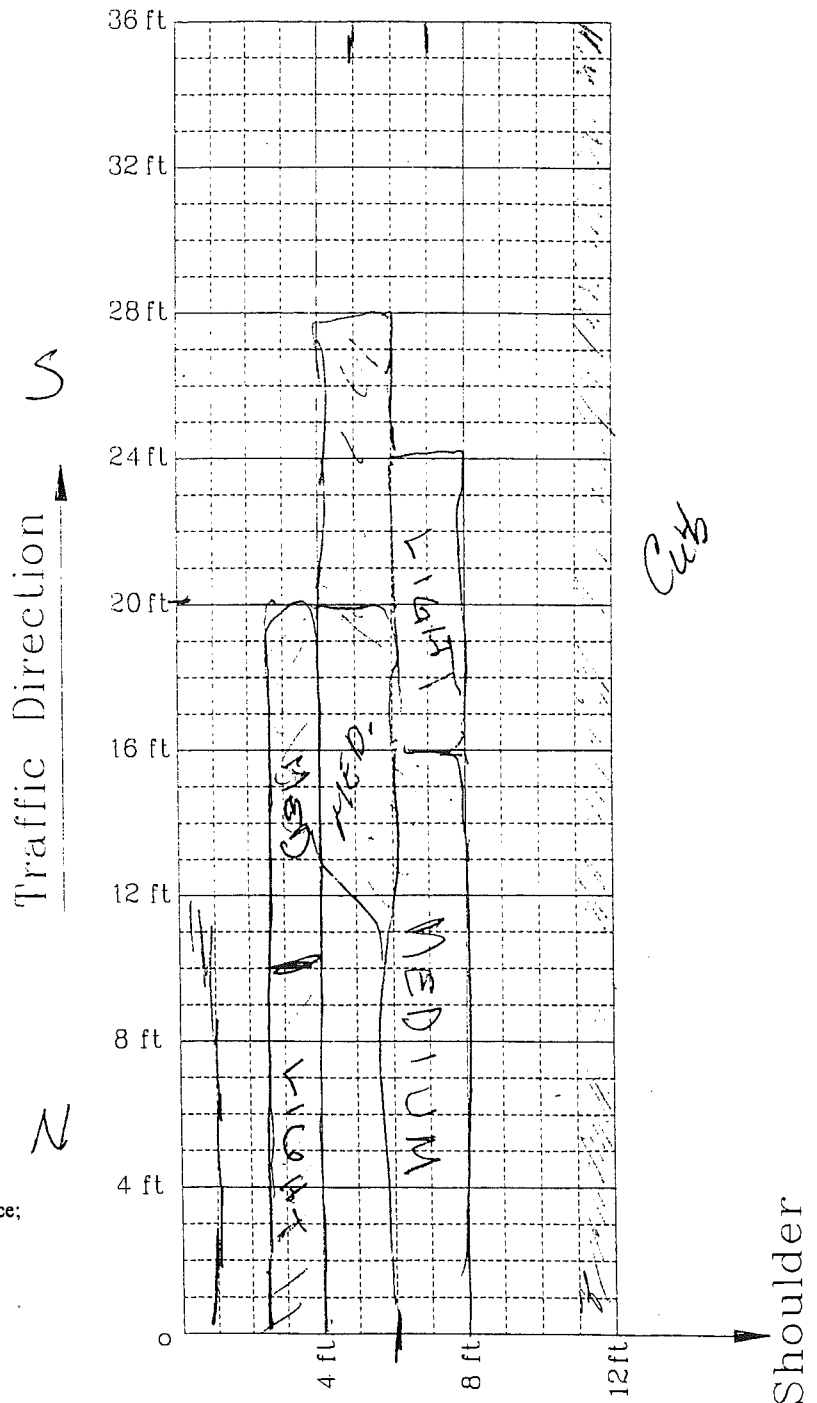
#### 3. Rut Depth

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Low       Moderate       High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
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COMMENTS 5 @ 11' with Lt S lane.  
"Pop outs have been sealed."

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

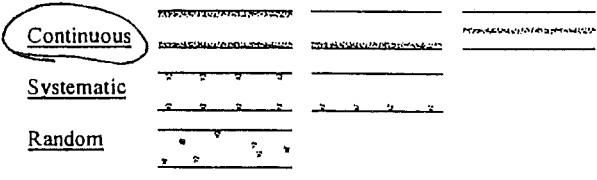
Weather: *Overcast w/ light snow*

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: *Canal* Direction: *SB Rt Lane*  
 Region: *University* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: *0* Test Site Number: *#10* ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

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**Distress to be Identified**

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**3. Rut Depth**

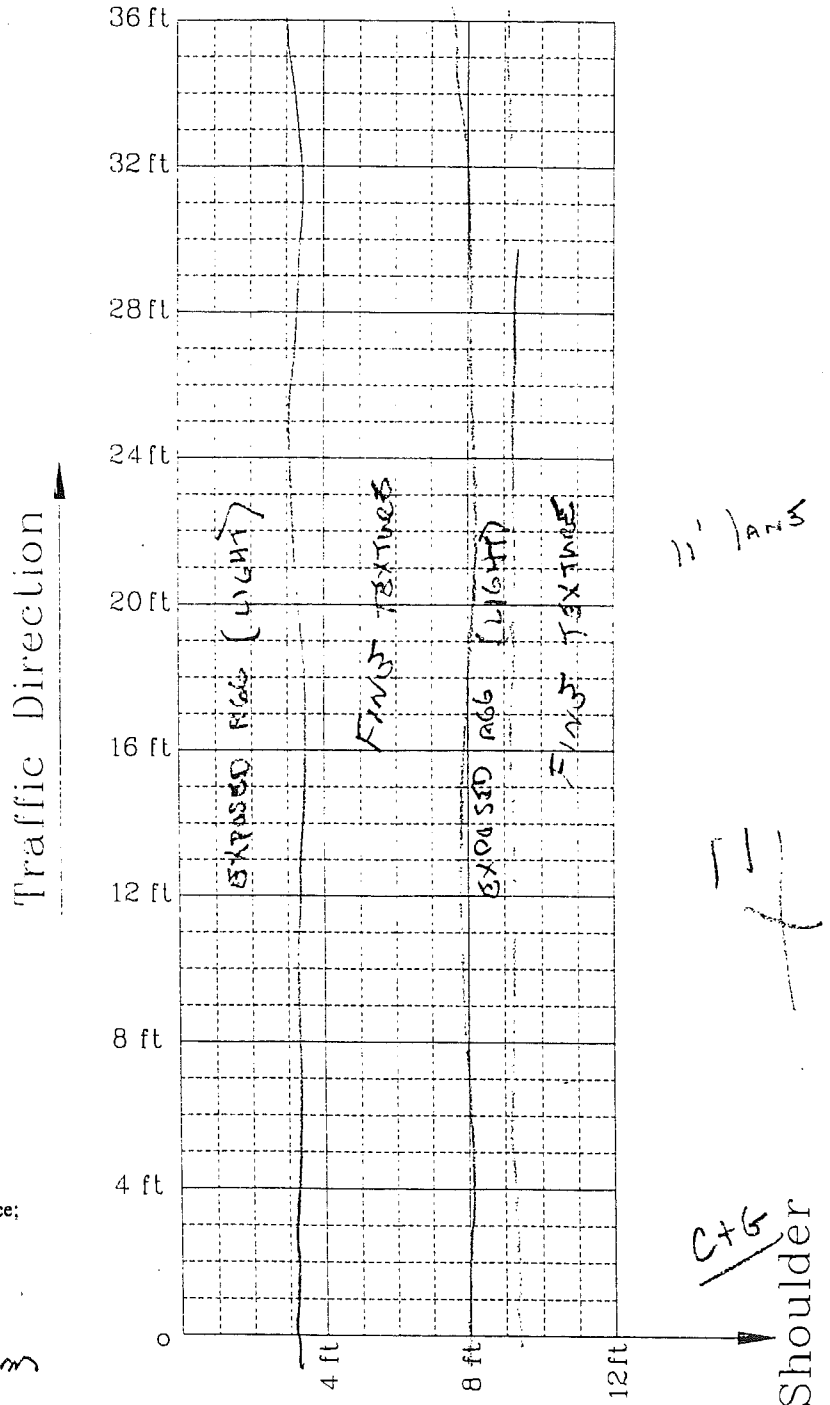
**4. Flushing**

Low     Moderate     High  
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**COMMENTS**

*Exposed Agg mostly visible from 8'-16'*  
*Stems popping - freeze/thaw action*

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

32° E

# Segregation Survey

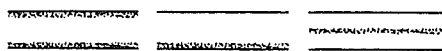
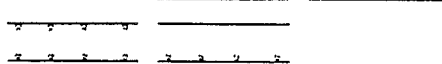

Date of Survey: Dec. 9, 1997

Surveyor: \_\_\_\_\_ (your name) *in file of ANA Michigan*  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: South  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to South of West shore  
 Section Number: \_\_\_\_\_ Test Site Number: 10 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

### Degree of Segregation

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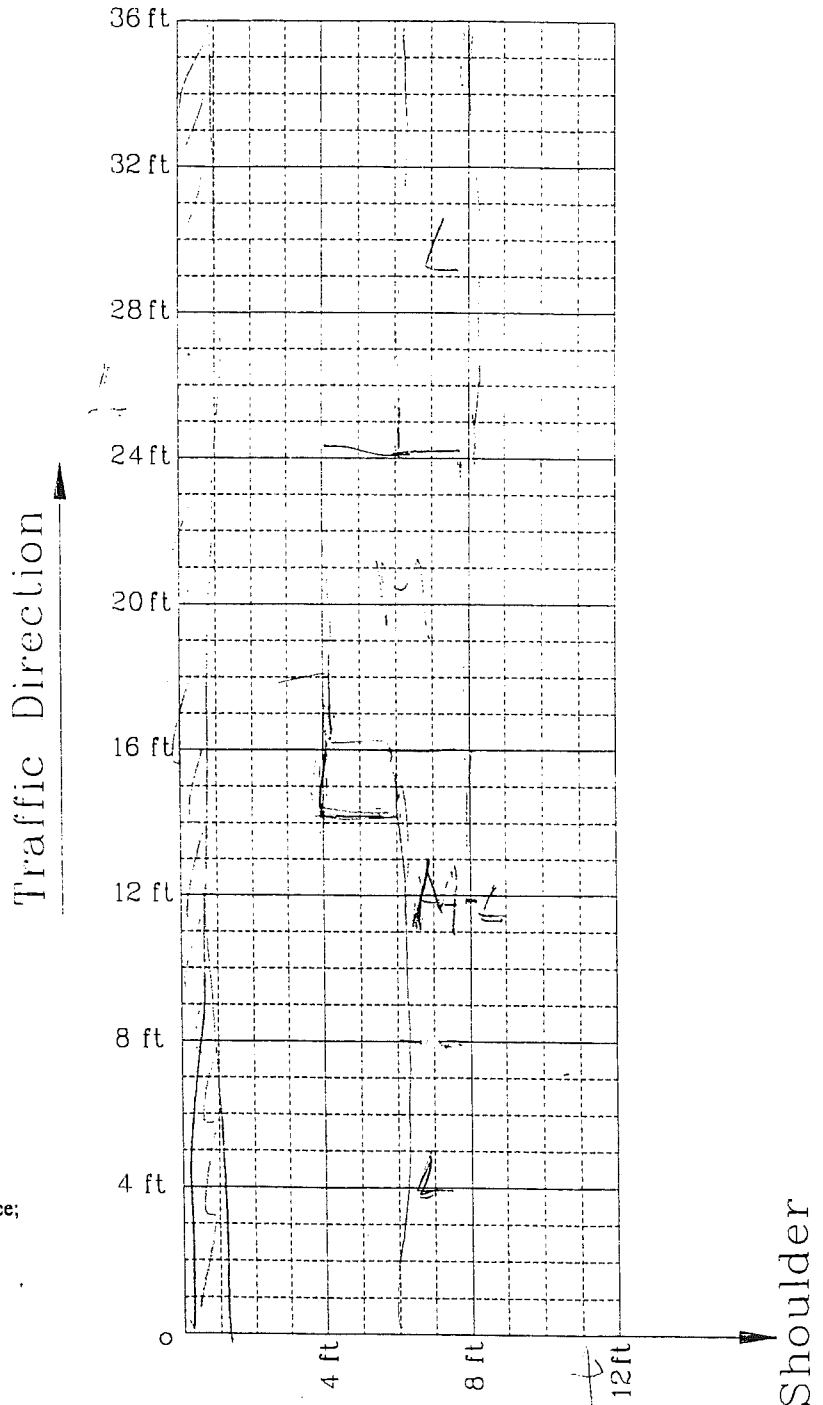
#### 3. Rut Depth

#### 4. Flushing

Low     Moderate     High  
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### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Nuclear Density Sampling Data (Feb. 13, 1998)

**Site 10**

**Canal Road S. Bound (150' South of Westshire Road)  
Eaton County**

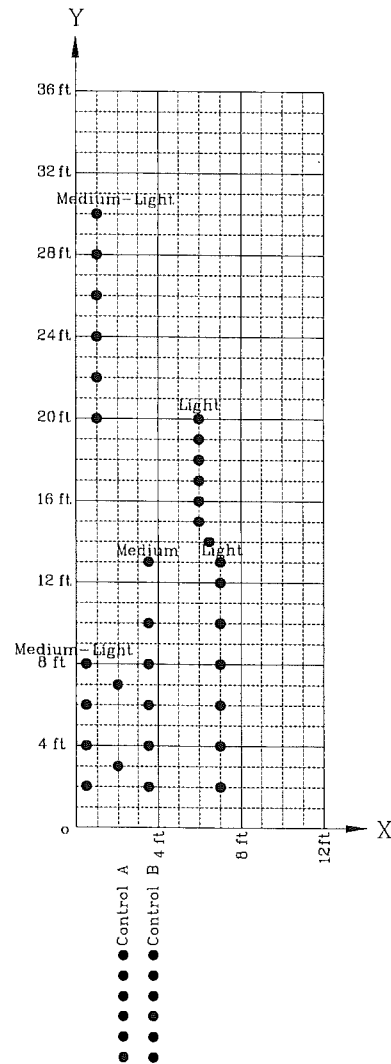
Chart Standard	Density	2617
	Moisture	705
Operating Standard	Density	2608
	Moisture	708

Gauge No.	102420
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2	
M-L		Light	
0130	144.6	0620	142.6
0128	145.8	0619	139.6
0126	144.6	0618	141.4
0124	144.7	0617	139.9
0122	143.8	0616	140.4
0120	142.6	0615	138.3
mean	144.4	0614	140.1
std	1.07	mean	140.3
		std	1.37

Sample 3		Sample 4		Sample 5	
M-L		Medium		Light	
0008	144.3	0313	135.6	0713	138.4
0006	142.4	0310	141.6	0712	138.9
0004	141.9	0308	142.2	0710	137.5
0002	142.8	0306	141.5	0708	143.1
0207	143.3	0304	142.9	0706	144.5
0203	144.0	0302	143.4	0704	143.5
mean	143.1	mean	141.2	0702	142.6
std	0.93	std	2.84	mean	141.7
				std	2.80

Control A		Control B	
A-6	147.1	B-6	149.5
A-5	146.7	B-5	148.1
A-4	146.3	B-4	147.1
A-3	147.3	B-3	148.2
A-2	146.8	B-2	147.5
A-1	145.9	B-1	148.3
mean	146.7	mean	148.1
std	0.52	std	0.82



## Nuclear Density Sampling Data (April 16, 1998)

**Site 10      Canal Road S. Bound (150' South of Westshire Road)  
Eaton County**

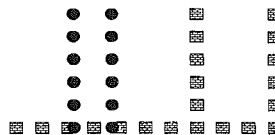
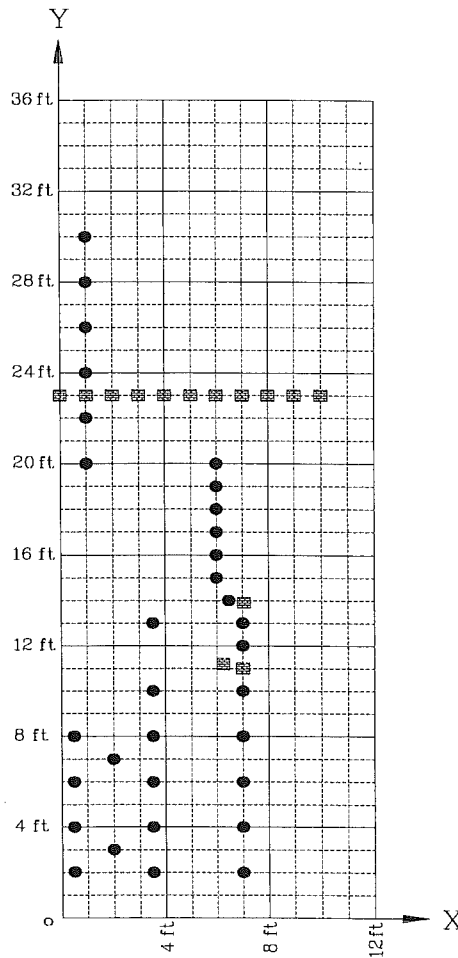
Chart Standard	Density	2863
	Moisture	652
Operating Standard	Density	2882
	Moisture	658

Gauge No.	101953
Model	Troxler 3440
Inspector	Mike Mullkin

Transverse		Transverse	
0023	137.0	Tran 0	133.8
0123	142.3	Tran 1	146.0
0223	145.8	Tran 2	144.2
0323	144.4	Tran 3	147.0
0423	141.9	Tran 4	157.8
0523	138.4	Tran 5	156.2
0623	144.1	Tran 6	152.4
0723	145.2	Tran 7	145.5
0823	144.5	Tran 8	143.7
0923	145.0	Tran 9	145.1
1023	138.1	Tran 10	137.4

Control C		Control D	
C-6	145.7	D-6	137.7
C-5	147.2	D-5	139.2
C-4	147.7	D-4	139.1
C-3	145.9	D-3	139.4
C-2	147.0	D-2	138.6
C-1	145.5	D-1	137.4
mean	146.5	mean	138.6
std	0.91	std	0.84

Loose Agg.	
Agg 1	142.6
Agg 2	141.5
Agg 3	128.5



Date 6/17/98 Highway \_\_\_\_\_  
 Tested By Joel Davenport Site Site 10  
 Checked By \_\_\_\_\_  
 Remarks \_\_\_\_\_

1	2	3	4	5	6	7	8	9	10
Specimen Number	Course Description	Weight in air (g)	SSD Weight (g)	Weight in water (g)	Volume (SSD) [4-5](cm <sup>3</sup> )	Volume (air) [3-5](cm <sup>3</sup> )	Specific Gravity SSD [4/6]	Specific Gravity air [3/7]	Remarks
23		1634.4	1640.5	913.1	727.4	721.3	2.255	2.266	
124		1632.9	1635.0	938.1	696.9	694.8	2.346	2.350	
310		1605.2	1607.6	916.9	690.7	688.3	2.327	2.332	
618		1868.7	1874.1	1059.9	814.2	808.8	2.302	2.310	
702		2060.2	2064.0	1181.3	882.7	878.9	2.338	2.344	
Loose 3		1800.7	1816.5	1018.9	797.6	781.8	2.277	2.303	
	6/18/98								
2		1632.1	1634.8	935.3	699.5	696.8	2.337	2.342	
122		1568.7	1571.1	894.5	676.6	674.2	2.322	2.327	
207		1558.4	1560.4	894.4	666.0	664.0	2.343	2.347	
223		1591.9	1593.7	913.6	680.1	678.3	2.343	2.347	
423		1902.7	1909.5	1070.7	838.8	832.0	2.276	2.287	
616		1774.3	1783.2	995.3	787.9	779.0	2.263	2.278	
Control D-3		2156.4	2159.5	1224.1	935.4	932.3	2.309	2.313	
Loose 2		1888.5	1893.6	1066.5	827.1	822.0	2.289	2.297	





## Sieve Analysis

Weight of bags & soil	1525.6
Weight of soil	1508.2

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0002	3/4 inch	19.00	3.762	20.4	1.35	1.35	98.65
	1/2 inch	12.50	3.116	21.6	1.43	2.78	97.22
	3/8 inch	9.50	2.754	127.4	8.45	11.23	88.77
	No. 4	4.75	2.016	501.5	33.25	44.49	55.51
	No. 8	2.37	1.474	223.0	14.79	59.27	40.73
	No. 16	1.18	1.077	142.2	9.43	68.70	31.30
	No. 30	0.60	0.795	136.1	9.02	77.73	22.27
	No. 50	0.30	0.582	140.8	9.34	87.06	12.94
	No. 100	0.15	0.426	106.1	7.04	94.10	5.90
	No. 200	0.08	0.312	52.9	3.51	97.61	2.39
		Pan			36.1	2.39	100.00
			Total weight	1508.1	100.00		

Operator	Joel Davenport		Weight of tear & soil	2407.9
Date	6/30/98		Weight of tear	899.8
Remarks			Weight of soil	1508.1

# Sieve Analysis

Weight of bags & soil	1441.2
Weight of soil	1423.8

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 10 0006	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	8.3	0.58	0.58	99.42	
	3/8 inch	9.50	2.754	152.4	10.70	11.29	88.71	
	No. 4	4.75	2.016	471.8	33.14	44.42	55.58	
	No. 8	2.37	1.474	227.3	15.96	60.39	39.61	
	No. 16	1.18	1.077	137.2	9.64	70.02	29.98	
	No. 30	0.60	0.795	129.1	9.07	79.09	20.91	
	No. 50	0.30	0.582	142.5	10.01	89.10	10.90	
	No. 100	0.15	0.426	90.3	6.34	95.44	4.56	
	No. 200	0.08	0.312	41.7	2.93	98.37	1.63	
		Pan			23.2	1.63	100.00	0.00
			Total	1423.8	100.00			
			weight					

Operator	Joel Davenport	Weight of tear & soil	2323.7
Date	6/30/98	Weight of tear	899.9
Remarks		Weight of soil	1423.8

## Sieve Analysis

Weight of bags & soil	1533.2
Weight of soil	1515.7

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0023	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	18.7	1.23	1.23	98.77
	3/8 inch	9.50	2.754	166.9	11.01	12.25	87.75
	No. 4	4.75	2.016	484.6	31.97	44.22	55.78
	No. 8	2.37	1.474	229.4	15.13	59.35	40.65
	No. 16	1.18	1.077	134.0	8.84	68.19	31.81
	No. 30	0.60	0.795	131.8	8.70	76.89	23.11
	No. 50	0.30	0.582	135.9	8.97	85.85	14.15
	No. 100	0.15	0.426	122.4	8.08	93.93	6.07
	No. 200	0.08	0.312	58.8	3.88	97.81	2.19
				33.2	2.19	100.00	0.00
				Total	1515.7	100.00	
			weight				

Operator	Joel Davenport	Weight of tear & soil	2415.4
Date	6/30/98	Weight of tear	899.9
Remarks		Weight of soil	1515.5

## Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil 1465.2  
Weight of soil 1447.7

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0122	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	38.6	2.67	2.67	97.33
	3/8 inch	9.50	2.754	100.4	6.94	9.60	90.40
	No. 4	4.75	2.016	480.7	33.21	42.81	57.19
	No. 8	2.37	1.474	216.5	14.96	57.77	42.23
	No. 16	1.18	1.077	128.1	8.85	66.62	33.38
	No. 30	0.60	0.795	102.7	7.10	73.72	26.28
	No. 50	0.30	0.582	146.4	10.11	83.83	16.17
	No. 100	0.15	0.426	127.5	8.81	92.64	7.36
	No. 200	0.08	0.312	58.3	4.03	96.67	3.33
		Pan			48.2	3.33	100.00
			Total weight	1447.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	2347.3
Date	6/30/98	Weight of tear	899.8
Remarks		Weight of soil	1447.5

# Sieve Analysis

Weight of bags & soil	1523.7
Weight of soil	1506.0

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 10 0124	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	39.7	2.64	2.64	97.36
	3/8 inch	9.50	2.754	142.7	9.48	12.12	87.88
	No. 4	4.75	2.016	471.3	31.31	43.42	56.58
	No. 8	2.37	1.474	233.1	15.48	58.91	41.09
	No. 16	1.18	1.077	140.3	9.32	68.23	31.77
	No. 30	0.60	0.795	127.0	8.44	76.66	23.34
	No. 50	0.30	0.582	147.3	9.78	86.45	13.55
	No. 100	0.15	0.426	111.4	7.40	93.85	6.15
	No. 200	0.08	0.312	57.9	3.85	97.69	2.31
		Pan			34.7	2.31	100.00
Total weight				1505.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	2405.3
Date	6/30/98	Weight of tear	899.9
Remarks		Weight of soil	1505.4

# Sieve Analysis

Weight of empty bags      17.5

Weight of bags & soil      1533.4  
 Weight of soil      1515.9

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0126	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	34.7	2.29	2.29	97.71
	3/8 inch	9.50	2.754	143.5	9.47	11.76	88.24
	No. 4	4.75	2.016	478.2	31.55	43.30	56.70
	No. 8	2.37	1.474	224.9	14.84	58.14	41.86
	No. 16	1.18	1.077	146.7	9.68	67.82	32.18
	No. 30	0.60	0.795	139.5	9.20	77.02	22.98
	No. 50	0.30	0.582	136.7	9.02	86.04	13.96
	No. 100	0.15	0.426	122.4	8.07	94.12	5.88
	No. 200	0.08	0.312	50.5	3.33	97.45	2.55
		Pan			38.7	2.55	100.00
			Total weight	1515.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2415.6
Date	6/30/98	Weight of tear	899.8
Remarks		Weight of soil	1515.8

# Sieve Analysis

Weight of bags & soil	1459.2
Weight of soil	1441.6

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0207	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	36.1	2.50	2.50	97.50
	3/8 inch	9.50	2.754	119.8	8.31	10.82	89.18
	No. 4	4.75	2.016	441.2	30.61	41.43	58.57
	No. 8	2.37	1.474	239.4	16.61	58.04	41.96
	No. 16	1.18	1.077	158.1	10.97	69.01	30.99
	No. 30	0.60	0.795	129.3	8.97	77.98	22.02
	No. 50	0.30	0.582	145.9	10.12	88.11	11.89
	No. 100	0.15	0.426	97.8	6.79	94.89	5.11
	No. 200	0.08	0.312	56.4	3.91	98.81	1.19
		Pan			17.2	1.19	100.00
			Total weight	1441.2	100.00		

Operator	Joel Davenport	Weight of tear & soil	2341.1
Date	7/1/98	Weight of tear	899.9
Remarks		Weight of soil	1441.2



## Sieve Analysis

Weight of empty bags	17.6
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Weight of bags & soil	1491.6
Weight of soil	1474.0

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0223	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	51.5	3.50	3.50	96.50
	3/8 inch	9.50	2.754	124.8	8.47	11.96	88.04
	No. 4	4.75	2.016	466.5	31.66	43.62	56.38
	No. 8	2.37	1.474	222.8	15.12	58.74	41.26
	No. 16	1.18	1.077	138.4	9.39	68.14	31.86
	No. 30	0.60	0.795	120.0	8.14	76.28	23.72
	No. 50	0.30	0.582	142.3	9.66	85.94	14.06
	No. 100	0.15	0.426	126.8	8.61	94.54	5.46
	No. 200	0.08	0.312	53.0	3.60	98.14	1.86
		Pan			27.4	1.86	100.00
			Total weight	1473.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2373.5
Date	7/1/98	Weight of tear	899.9
Remarks	Weight of soil 1473.6		

## Sieve Analysis

Weight of bags & soil	1530.6
Weight of soil	1512.9
Weight of empty bags	17.7

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
0306	1/2 inch	12.50	3.116	33.6	2.22	2.22	97.78
	3/8 inch	9.50	2.754	157.1	10.38	12.61	87.39
	No. 4	4.75	2.016	504.0	33.32	45.92	54.08
	No. 8	2.37	1.474	209.1	13.82	59.74	40.26
	No. 16	1.18	1.077	150.0	9.92	69.66	30.34
	No. 30	0.60	0.795	171.2	11.32	80.98	19.02
	No. 50	0.30	0.582	145.3	9.60	90.58	9.42
	No. 100	0.15	0.426	84.4	5.58	96.16	3.84
	No. 200	0.08	0.312	41.8	2.76	98.92	1.08
	Pan			16.3	1.08	100.00	0.00
			Total	1512.8	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2412.8
Date	7/1/98	Weight of tear	899.9
Remarks		Weight of soil	1512.9

## Sieve Analysis

Weight of bags & soil	1484.8
Weight of soil	1467.3
	Weight of empty bags
	17.5

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 10 0308	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	15.6	1.06	1.06	98.94	
	3/8 inch	9.50	2.754	159.7	10.89	11.95	88.05	
	No. 4	4.75	2.016	500.9	34.15	46.10	53.90	
	No. 8	2.37	1.474	208.3	14.20	60.31	39.69	
	No. 16	1.18	1.077	131.8	8.99	69.29	30.71	
	No. 30	0.60	0.795	124.8	8.51	77.80	22.20	
	No. 50	0.30	0.582	146.7	10.00	87.80	12.20	
	No. 100	0.15	0.426	104.7	7.14	94.94	5.06	
	No. 200	0.08	0.312	48.0	3.27	98.21	1.79	
		Pan			26.2	1.79	100.00	0.00
			Total weight	1466.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2366.7
Date	7/1/98	Weight of tear	899.9
Remarks		Weight of soil	1466.8

# Sieve Analysis

Weight of bags & soil	1498.2
Weight of soil	1480.8

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 10 0310	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	31.9	2.16	2.16	97.84
	3/8 inch	9.50	2.754	124.1	8.38	10.54	89.46
	No. 4	4.75	2.016	504.7	34.10	44.64	55.36
	No. 8	2.37	1.474	213.8	14.44	59.08	40.92
	No. 16	1.18	1.077	141.9	9.59	68.67	31.33
	No. 30	0.60	0.795	140.4	9.49	78.16	21.84
	No. 50	0.30	0.582	142.2	9.61	87.76	12.24
	No. 100	0.15	0.426	104.1	7.03	94.80	5.20
	No. 200	0.08	0.312	44.7	3.02	97.82	2.18
		Pan			32.3	2.18	100.00
			Total weight	1480.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	2380.0
Date	7/6/98	Weight of tear	899.9
Remarks		Weight of soil	1480.1

## Sieve Analysis

Weight of bags & soil	1780.2
Weight of soil	1762.8

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0423	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	40.6	2.30	2.30	97.70
	3/8 inch	9.50	2.754	184.3	10.46	12.76	87.24
	No. 4	4.75	2.016	620.8	35.23	47.99	52.01
	No. 8	2.37	1.474	239.0	13.56	61.55	38.45
	No. 16	1.18	1.077	152.9	8.68	70.23	29.77
	No. 30	0.60	0.795	155.6	8.83	79.06	20.94
	No. 50	0.30	0.582	177.1	10.05	89.11	10.89
	No. 100	0.15	0.426	113.0	6.41	95.52	4.48
	No. 200	0.08	0.312	53.1	3.01	98.53	1.47
		Pan			25.9	1.47	100.00
			Total weight	1762.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2662.2
Date	7/6/98	Weight of tear	899.9
Remarks		Weight of soil	1762.3

## Sieve Analysis

Weight of bags & soil	1665.2
Weight of soil	1647.7

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0616	3/4 inch	19.00	3.762	11.9	0.72	0.72	99.28
	1/2 inch	12.50	3.116	32.1	1.95	2.67	97.33
	3/8 inch	9.50	2.754	231.7	14.06	16.73	83.27
	No. 4	4.75	2.016	582.0	35.33	52.06	47.94
	No. 8	2.37	1.474	188.2	11.42	63.48	36.52
	No. 16	1.18	1.077	117.5	7.13	70.62	29.38
	No. 30	0.60	0.795	141.1	8.56	79.18	20.82
	No. 50	0.30	0.582	136.3	8.27	87.45	12.55
	No. 100	0.15	0.426	120.9	7.34	94.79	5.21
	No. 200	0.08	0.312	52.3	3.17	97.97	2.03
		Pan			33.5	2.03	100.00
			Total weight	1647.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2547.2
Date	7/6/98	Weight of tear	899.9
Remarks		Weight of soil	1647.3

## Sieve Analysis

Weight of bags & soil	1730.5
Weight of soil	1713.0
Weight of empty bags	17.5

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0617	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	45.7	2.67	2.67	97.33
	3/8 inch	9.50	2.754	230.6	13.47	16.13	83.87
	No. 4	4.75	2.016	528.5	30.86	47.00	53.00
	No. 8	2.37	1.474	248.0	14.48	61.48	38.52
	No. 16	1.18	1.077	135.0	7.88	69.36	30.64
	No. 30	0.60	0.795	114.5	6.69	76.05	23.95
	No. 50	0.30	0.582	150.1	8.76	84.81	15.19
	No. 100	0.15	0.426	144.8	8.46	93.27	6.73
	No. 200	0.08	0.312	65.0	3.80	97.06	2.94
		Pan			50.3	2.94	100.00
			Total weight	1712.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2612.4
Date	7/6/98	Weight of tear	899.9
Remarks		Weight of soil	1712.5

# Sieve Analysis

Weight of empty bags      17.5

Weight of bags & soil      1754.3  
Weight of soil              1736.8

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0618	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	93.2	5.37	5.37	94.63
	3/8 inch	9.50	2.754	238.5	13.73	19.10	80.90
	No. 4	4.75	2.016	528.6	30.44	49.54	50.46
	No. 8	2.37	1.474	232.1	13.36	62.90	37.10
	No. 16	1.18	1.077	131.7	7.58	70.48	29.52
	No. 30	0.60	0.795	103.2	5.94	76.43	23.57
	No. 50	0.30	0.582	143.4	8.26	84.68	15.32
	No. 100	0.15	0.426	144.3	8.31	92.99	7.01
	No. 200	0.08	0.312	63.0	3.63	96.62	3.38
		Pan			58.7	3.38	100.00
			Total weight	1736.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	2636.7
Date	7/7/98	Weight of tear	899.9
Remarks		Weight of soil	1736.8



## Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil	1925.9
Weight of soil	1908.4

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0702	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	85.5	4.48	4.48	95.52
	3/8 inch	9.50	2.754	240.0	12.58	17.06	82.94
	No. 4	4.75	2.016	634.9	33.28	50.34	49.66
	No. 8	2.37	1.474	228.9	12.00	62.34	37.66
	No. 16	1.18	1.077	166.4	8.72	71.06	28.94
	No. 30	0.60	0.795	186.2	9.76	80.82	19.18
	No. 50	0.30	0.582	161.7	8.48	89.29	10.71
	No. 100	0.15	0.426	118.3	6.20	95.49	4.51
	No. 200	0.08	0.312	52.2	2.74	98.23	1.77
		Pan			33.8	1.77	100.00
			Total weight	1907.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2807.5
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	1907.7

## Sieve Analysis

Weight of bags & soil	1823.0
Weight of soil	1805.6

Weight of empty bags	17.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 0708	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	81.5	4.51	4.51	95.49
	3/8 inch	9.50	2.754	272.3	15.08	19.60	80.40
	No. 4	4.75	2.016	587.7	32.55	52.15	47.85
	No. 8	2.37	1.474	224.9	12.46	64.61	35.39
	No. 16	1.18	1.077	155.2	8.60	73.21	26.79
	No. 30	0.60	0.795	134.6	7.46	80.66	19.34
	No. 50	0.30	0.582	151.0	8.36	89.03	10.97
	No. 100	0.15	0.426	112.5	6.23	95.26	4.74
	No. 200	0.08	0.312	49.0	2.71	97.97	2.03
		Pan			36.6	2.03	100.00
			Total	1805.3	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2705.1
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	1805.3

## Sieve Analysis

Weight of bags & soil	1683.2
Weight of soil	1665.6

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Cum. % retained	Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Percent retained		
Site 10 0712	3/4 inch	19.00	3.762	0.0	0.00	0.00	0.00	100.00
	1/2 inch	12.50	3.116	88.2	5.30	5.30	5.30	94.70
	3/8 inch	9.50	2.754	244.9	14.71	20.00	20.00	80.00
	No. 4	4.75	2.016	557.9	33.51	53.51	53.51	46.49
	No. 8	2.37	1.474	194.0	11.65	65.16	65.16	34.84
	No. 16	1.18	1.077	110.0	6.61	71.77	71.77	28.23
	No. 30	0.60	0.795	110.7	6.65	78.42	78.42	21.58
	No. 50	0.30	0.582	156.6	9.40	87.82	87.82	12.18
	No. 100	0.15	0.426	119.8	7.19	95.02	95.02	4.98
	No. 200	0.08	0.312	50.3	3.02	98.04	98.04	1.96
		Pan			32.7	1.96	100.00	100.00
			Total weight	1665.1	100.00			

Operator	Joel Davenport	Weight of tear & soil	2564.9
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	1665.1

# Sieve Analysis

Weight of bags & soil	1773.8
Weight of soil	1756.1

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
0823	1/2 inch	12.50	3.116	17.5	1.00	1.00	99.00
	3/8 inch	9.50	2.754	174.3	9.93	10.93	89.07
	No. 4	4.75	2.016	619.0	35.26	46.19	53.81
	No. 8	2.37	1.474	241.9	13.78	59.97	40.03
	No. 16	1.18	1.077	181.6	10.34	70.31	29.69
	No. 30	0.60	0.795	168.7	9.61	79.92	20.08
	No. 50	0.30	0.582	142.9	8.14	88.06	11.94
	No. 100	0.15	0.426	120.4	6.86	94.92	5.08
	No. 200	0.08	0.312	62.0	3.53	98.45	1.55
	Pan			27.2	1.55	100.00	0.00
			Total weight	1755.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2655.3
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	1755.5

## Sieve Analysis

Weight of bags & soil	2026.3
Weight of soil	2008.8
Weight of empty bags	
17.5	

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Control C-1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	36.9	1.84	1.84	98.16
	3/8 inch	9.50	2.754	163.7	8.15	9.99	90.01
	No. 4	4.75	2.016	692.7	34.49	44.47	55.53
	No. 8	2.37	1.474	276.9	13.79	58.26	41.74
	No. 16	1.18	1.077	208.9	10.40	68.66	31.34
	No. 30	0.60	0.795	233.2	11.61	80.27	19.73
	No. 50	0.30	0.582	198.7	9.89	90.16	9.84
	No. 100	0.15	0.426	114.3	5.69	95.85	4.15
	No. 200	0.08	0.312	59.2	2.95	98.80	1.20
		Pan			24.1	1.20	100.00
			Total weight	2008.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2908.2
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	2008.4

# Sieve Analysis

Weight of bags & soil      2024.7  
 Weight of soil                2007.2

Weight of empty bags      17.5

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Control C-3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	48.6	2.42	2.42	97.58
	3/8 inch	9.50	2.754	188.2	9.38	11.80	88.20
	No. 4	4.75	2.016	645.1	32.14	43.94	56.06
	No. 8	2.37	1.474	272.3	13.57	57.51	42.49
	No. 16	1.18	1.077	191.7	9.55	67.06	32.94
	No. 30	0.60	0.795	214.2	10.67	77.74	22.26
	No. 50	0.30	0.582	209.4	10.43	88.17	11.83
	No. 100	0.15	0.426	156.3	7.79	95.96	4.04
	No. 200	0.08	0.312	60.4	3.01	98.97	1.03
		Pan			20.7	1.03	100.00
			Total weight	2006.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	2906.7
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	2006.9

## Sieve Analysis

Weight of empty bags	17.6
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Weight of bags & soil	2079.9
Weight of soil	2062.3

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Control C-5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	58.2	2.82	2.82	97.18
	3/8 inch	9.50	2.754	220.8	10.71	13.53	86.47
	No. 4	4.75	2.016	655.1	31.77	45.31	54.69
	No. 8	2.37	1.474	268.1	13.00	58.31	41.69
	No. 16	1.18	1.077	194.0	9.41	67.72	32.28
	No. 30	0.60	0.795	226.2	10.97	78.69	21.31
	No. 50	0.30	0.582	234.1	11.35	90.04	9.96
	No. 100	0.15	0.426	126.9	6.15	96.20	3.80
	No. 200	0.08	0.312	57.7	2.80	99.00	1.00
		Pan			20.7	1.00	100.00
			Total weight	2061.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2961.7
Date	7/7/98	Weight of tear	899.8
Remarks		Weight of soil	2061.9

## Sieve Analysis

Weight of bags & soil	1967.7
Weight of soil	1950.2

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Control D-1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	34.5	1.77	1.77	98.23
	3/8 inch	9.50	2.754	161.4	8.28	10.05	89.95
	No. 4	4.75	2.016	655.5	33.62	43.66	56.34
	No. 8	2.37	1.474	273.4	14.02	57.68	42.32
	No. 16	1.18	1.077	196.5	10.08	67.76	32.24
	No. 30	0.60	0.795	226.5	11.62	79.37	20.63
	No. 50	0.30	0.582	175.4	8.99	88.37	11.63
	No. 100	0.15	0.426	134.3	6.89	95.26	4.74
	No. 200	0.08	0.312	53.9	2.76	98.02	1.98
		Pan			38.6	1.98	100.00
			Total weight	1950.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	2849.8
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	1950.0



## Sieve Analysis

Weight of bags & soil	2010.9
Weight of soil	1993.3
Weight of empty bags	
17.6	

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Control D-3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	20.6	1.03	1.03	98.97
	3/8 inch	9.50	2.754	157.4	7.90	8.93	91.07
	No. 4	4.75	2.016	714.2	35.84	44.78	55.22
	No. 8	2.37	1.474	276.4	13.87	58.65	41.35
	No. 16	1.18	1.077	200.0	10.04	68.68	31.32
	No. 30	0.60	0.795	217.0	10.89	79.57	20.43
	No. 50	0.30	0.582	190.5	9.56	89.13	10.87
	No. 100	0.15	0.426	129.3	6.49	95.62	4.38
	No. 200	0.08	0.312	58.0	2.91	98.53	1.47
		Pan			29.2	1.47	100.00
				Total weight	1992.6	100.00	

Operator	Joel Davenport	Weight of tear & soil	2892.2
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	1992.4

# Sieve Analysis

Weight of bags & soil	2149.0
Weight of soil	2131.4

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 10 Control D-5	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	27.3	1.28	1.28	98.72	
	3/8 inch	9.50	2.754	171.3	8.04	9.32	90.68	
	No. 4	4.75	2.016	761.4	35.73	45.05	54.95	
	No. 8	2.37	1.474	259.1	12.16	57.21	42.79	
	No. 16	1.18	1.077	204.5	9.60	66.80	33.20	
	No. 30	0.60	0.795	234.2	10.99	77.79	22.21	
	No. 50	0.30	0.582	232.7	10.92	88.71	11.29	
	No. 100	0.15	0.426	150.5	7.06	95.77	4.23	
	No. 200	0.08	0.312	62.2	2.92	98.69	1.31	
		Pan			27.9	1.31	100.00	0.00
				Total weight	2131.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	3030.8
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	2131.0

## Sieve Analysis

Weight of empty bags 17.5

Weight of bags & soil	1886.8
Weight of soil	1869.3

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
Tran. 2	1/2 inch	12.50	3.116	24.2	1.30	1.30	98.70
	3/8 inch	9.50	2.754	177.9	9.52	10.82	89.18
	No. 4	4.75	2.016	609.5	32.62	43.43	56.57
	No. 8	2.37	1.474	274.7	14.70	58.13	41.87
	No. 16	1.18	1.077	223.6	11.97	70.10	29.90
	No. 30	0.60	0.795	203.9	10.91	81.01	18.99
	No. 50	0.30	0.582	165.3	8.85	89.86	10.14
	No. 100	0.15	0.426	120.7	6.46	96.32	3.68
	No. 200	0.08	0.312	45.9	2.46	98.77	1.23
	Pan			22.9	1.23	100.00	0.00
			Total weight	1868.6	100.00		

Operator	Joel Davenport		Weight of tear & soil	2768.4
Date	7/9/98		Weight of tear	899.8
Remarks			Weight of soil	1868.6

## Sieve Analysis

Weight of bags & soil	2061.5
Weight of soil	2044.1
	17.4

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
Tran. 5	1/2 inch	12.50	3.116	26.8	1.31	1.31	98.69
	3/8 inch	9.50	2.754	200.9	9.83	11.14	88.86
	No. 4	4.75	2.016	696.3	34.07	45.21	54.79
	No. 8	2.37	1.474	273.4	13.38	58.59	41.41
	No. 16	1.18	1.077	191.4	9.37	67.96	32.04
	No. 30	0.60	0.795	215.7	10.55	78.51	21.49
	No. 50	0.30	0.582	240.8	11.78	90.29	9.71
	No. 100	0.15	0.426	117.5	5.75	96.04	3.96
	No. 200	0.08	0.312	51.6	2.52	98.57	1.43
	Pan			29.3	1.43	100.00	0.00
			Total weight	2043.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	2943.5
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	2043.7

## Sieve Analysis

Weight of bags & soil	1819.7
Weight of soil	1802.0

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 10 Loose 1	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	65.0	3.61	3.61	96.39	
	3/8 inch	9.50	2.754	280.7	15.58	19.19	80.81	
	No. 4	4.75	2.016	579.6	32.17	51.36	48.64	
	No. 8	2.37	1.474	220.3	12.23	63.59	36.41	
	No. 16	1.18	1.077	141.2	7.84	71.43	28.57	
	No. 30	0.60	0.795	151.2	8.39	79.82	20.18	
	No. 50	0.30	0.582	175.5	9.74	89.56	10.44	
	No. 100	0.15	0.426	116.1	6.44	96.00	4.00	
	No. 200	0.08	0.312	49.3	2.74	98.74	1.26	
	Pan			22.7	1.26	100.00	0.00	
			Total weight	1801.6	100.00			

Operator	Joel Davenport	Weight of tear & soil	2701.5
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	1801.7

# Sieve Analysis

Weight of empty bags      17.4

Weight of bags & soil      1777.3  
Weight of soil              1759.9

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 10 Loose 2	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	35.4	2.01	2.01	97.99
	3/8 inch	9.50	2.754	232.7	13.22	15.24	84.76
	No. 4	4.75	2.016	640.5	36.40	51.64	48.36
	No. 8	2.37	1.474	202.9	11.53	63.17	36.83
	No. 16	1.18	1.077	133.1	7.56	70.73	29.27
	No. 30	0.60	0.795	162.0	9.21	79.94	20.06
	No. 50	0.30	0.582	177.1	10.06	90.00	10.00
	No. 100	0.15	0.426	104.5	5.94	95.94	4.06
	No. 200	0.08	0.312	51.5	2.93	98.87	1.13
		Pan			19.9	1.13	100.00
			Total	1759.6	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	2659.5
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	1759.7

## Sieve Analysis

Weight of bags & soil	1703.2
Weight of soil	1685.5
Weight of empty bags	
17.7	

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 10 Loose 3	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	59.7	3.54	3.54	96.46	
	3/8 inch	9.50	2.754	230.4	13.68	17.22	82.78	
	No. 4	4.75	2.016	592.7	35.18	52.40	47.60	
	No. 8	2.37	1.474	194.1	11.52	63.92	36.08	
	No. 16	1.18	1.077	111.1	6.59	70.52	29.48	
	No. 30	0.60	0.795	109.6	6.51	77.02	22.98	
	No. 50	0.30	0.582	144.6	8.58	85.61	14.39	
	No. 100	0.15	0.426	131.1	7.78	93.39	6.61	
	No. 200	0.08	0.312	61.8	3.67	97.06	2.94	
		Pan			49.6	2.94	100.00	0.00
				Total weight	1684.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	2584.5
Date	7/9/98	Weight of tear	899.8
Remarks		Weight of soil	1684.7

# Site 11



# Segregation Survey

Date of Survey: Dec. 9, 1997

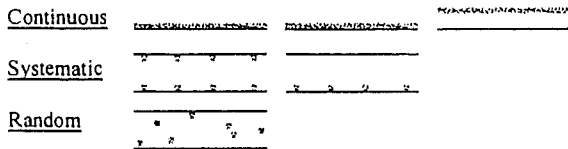
Weather: 1200'

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M100 Direction: NB south of M43  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 11 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low       Moderate       High
- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low       Moderate       High
- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

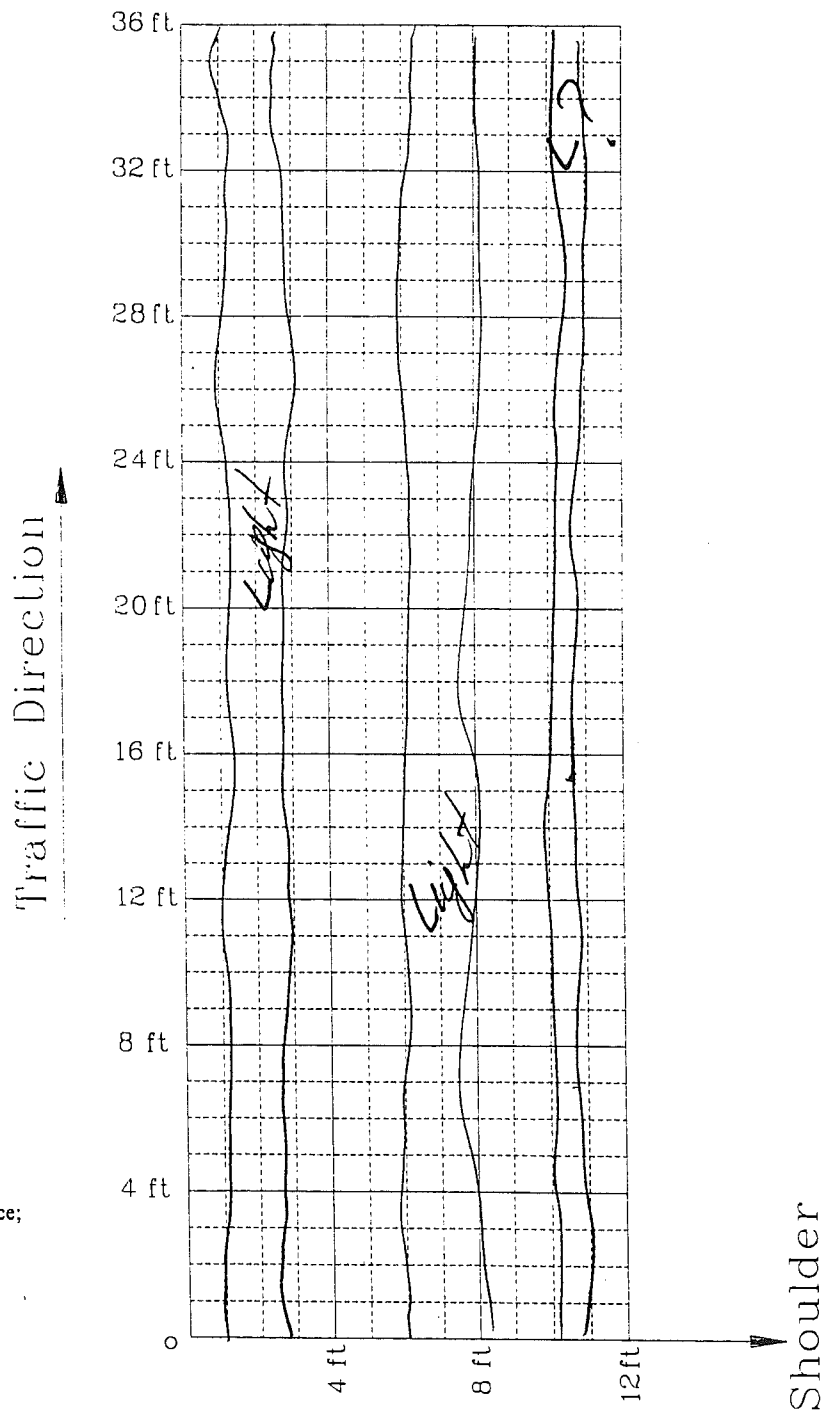
**3. Rut Depth**

**4. Flushing**

- Low       Moderate       High
- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-100 Direction: NORTH  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 11 ADT: \_\_\_\_\_

1/4 mi S. OF 43 240' S. OF SIGN  
 Segregation Map

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low-severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

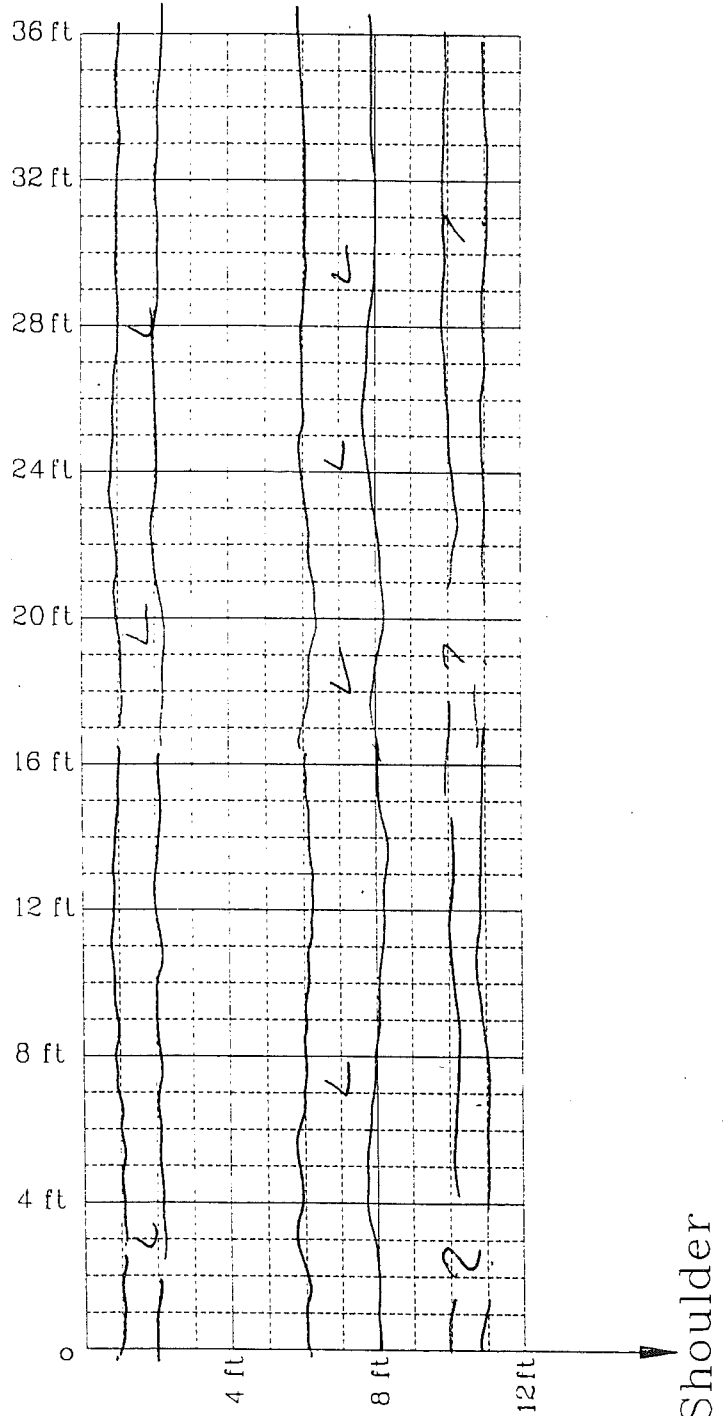
Low  Moderate  High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

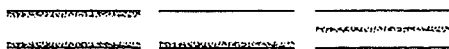
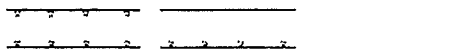

Weather:

Surveyor: \_\_\_\_\_ (your name) *NBD*  
 Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: *NBD*  
 Region: *UNIVERSITY* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *11* ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

**Continuous**   
**Systematic**   
**Random** 

## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

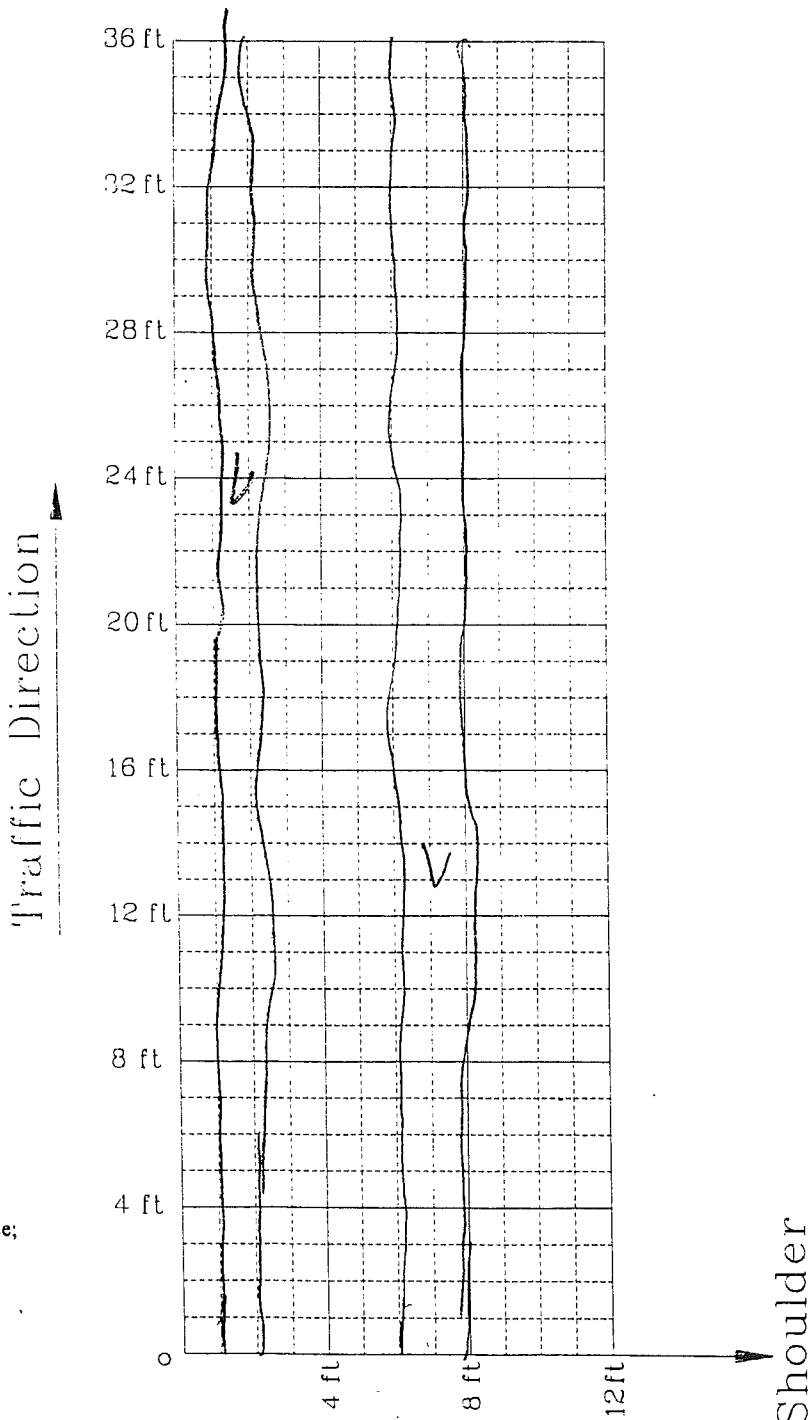
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather: \_\_\_\_\_

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-100 Direction: N  
 Region: University Mile Post: from oak tree to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 11 ADT: \_\_\_\_\_

**Definition of Segregation:**

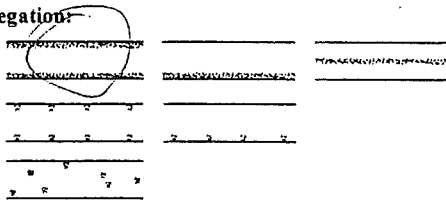
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous

Systematic

Random



**Degree of Segregation**

- Heavy: stone against stone, little or no matrix (fine)
- Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified:**

**1. Raveling**

- Low       Moderate       High

- Low: aggregate or binder has started to wear away, but not progressed significantly
- Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low       Moderate       High

- Low: a crack with a mean width  $\leq 0.25$  in.
- Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

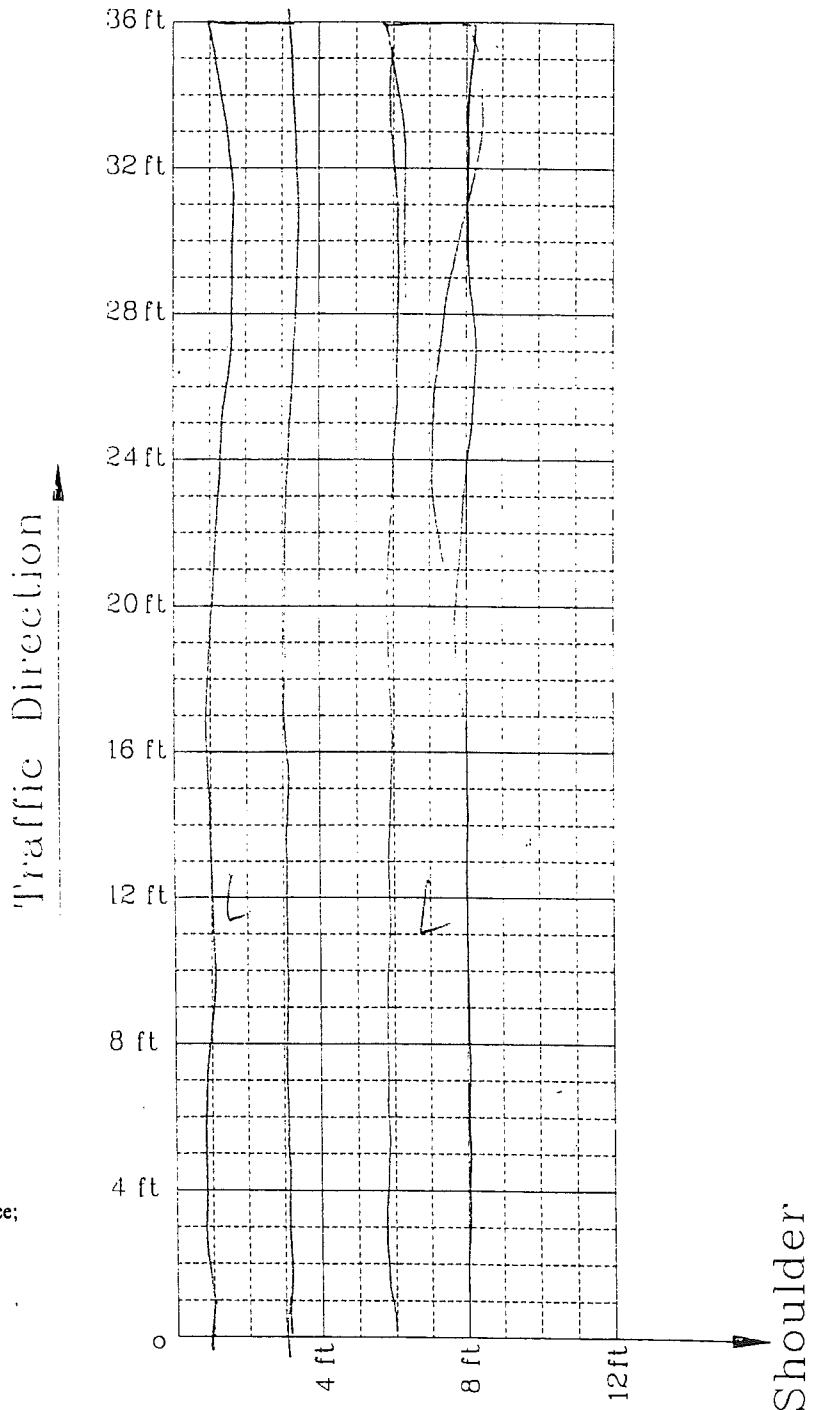
**4. Flushing**

- Low       Moderate       High

- Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate: an area of pavement surface that is losing surface texture due to excess asphalt
- High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

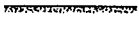
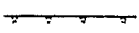
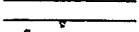
Weather: Cool, DAMP  
OVERCAST

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-100 Direction: \_\_\_\_\_  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 11 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous  \_\_\_\_\_  
Systematic  \_\_\_\_\_  
Random  \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High  
Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low, severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

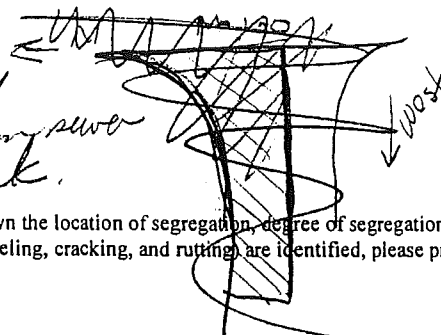
**3. Rut Depth**

**4. Flushing**

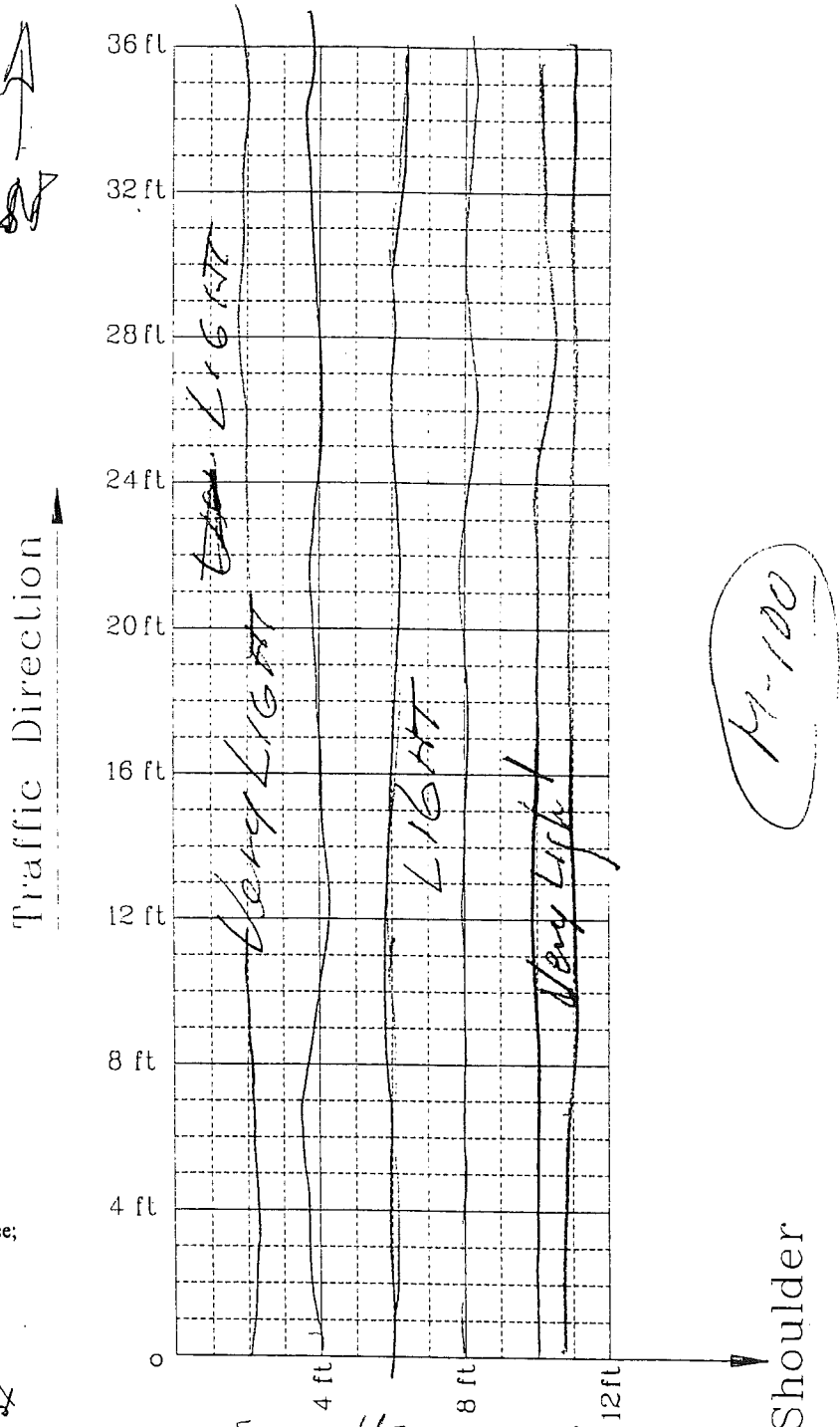
Low       Moderate       High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

*For very dirty from sewer work.*



**Segregation Map**



*Maybe some rutting in spring*

Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

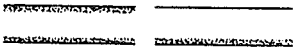
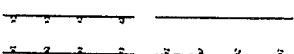
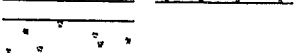
Weather: *Overcast Light Snow*

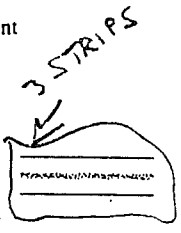
Surveyor: \_\_\_\_\_ (your name) *S. J. M. 43*  
 Control Section Number: *23-1* Route: *M-100* Direction: *NB*  
 Region: *University* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *411* ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

- Continuous** 
- Systematic** 
- Random** 



## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat

**Light:** matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

- Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

- Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

- Low       Moderate       High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

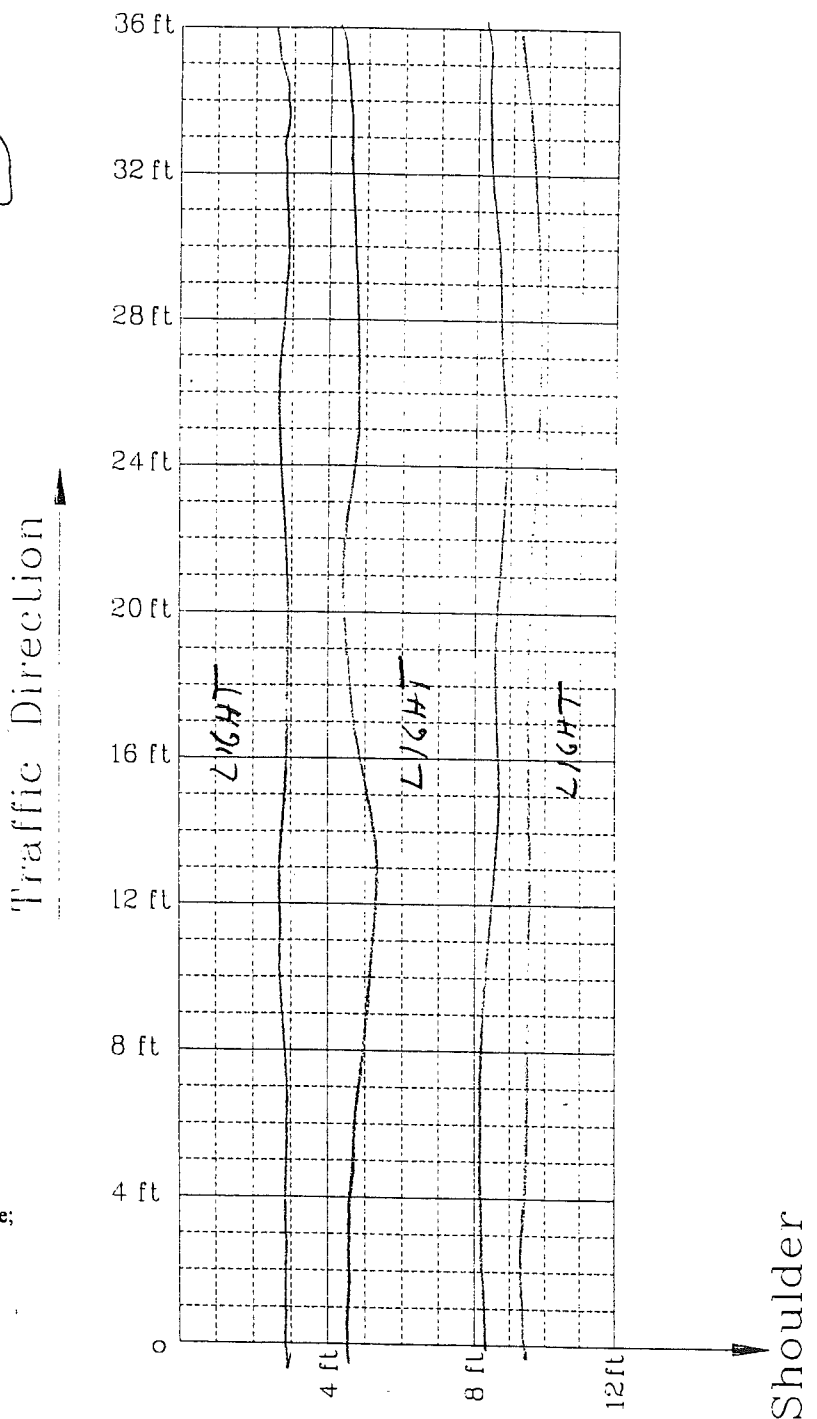
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

*Very light surface muddy W/P causing raveling?*

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

35°F

# Segregation Survey

Date of Survey: Dec. 9, 1997

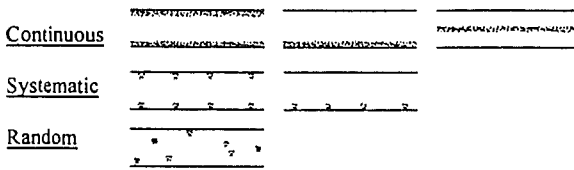
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-100 Direction: North bound  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 11 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.  
**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

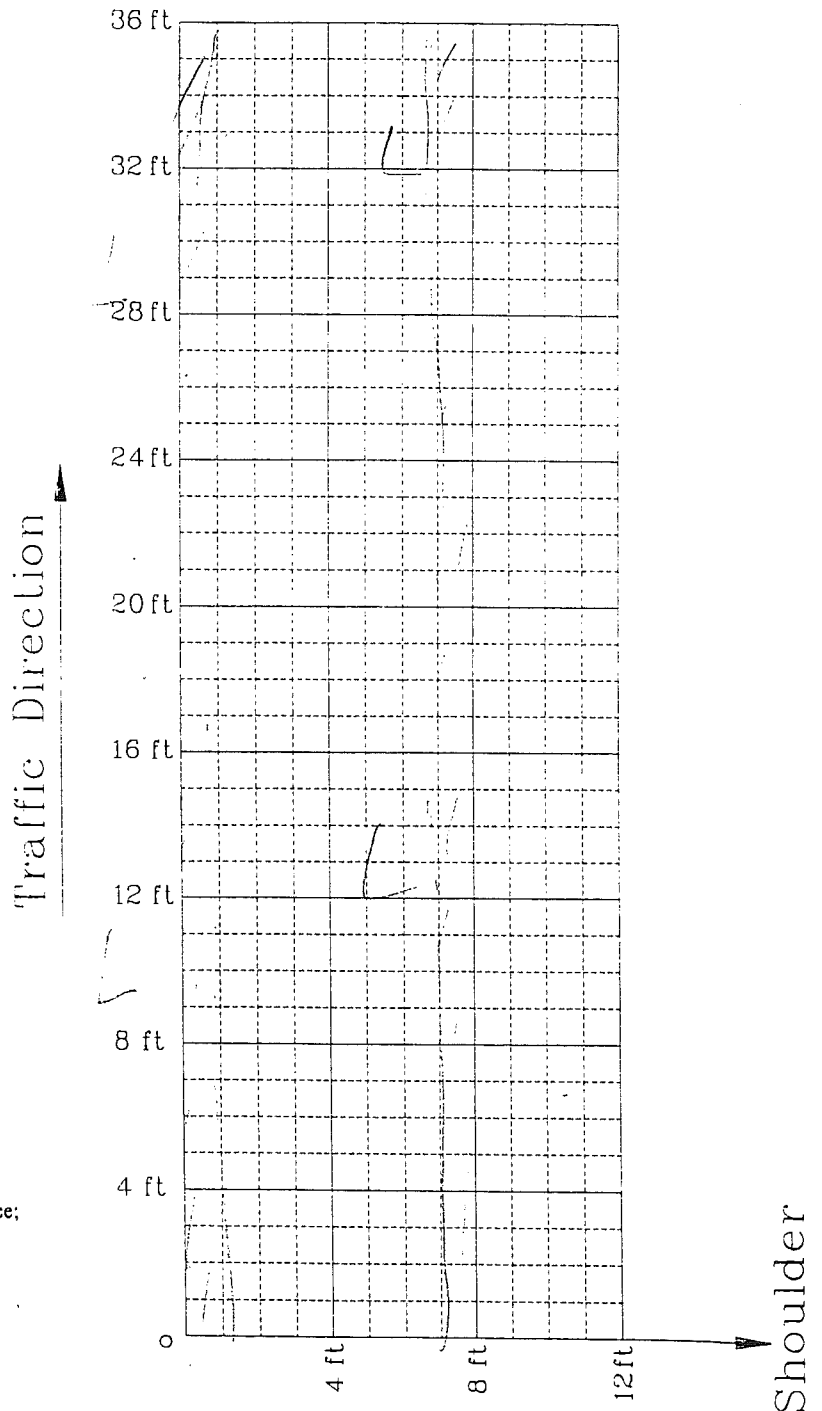
#### 4. Flushing

Low       Moderate       High

**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt  
**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Nuclear Density Sampling Data (Feb. 13, 1998)

**Site 11**

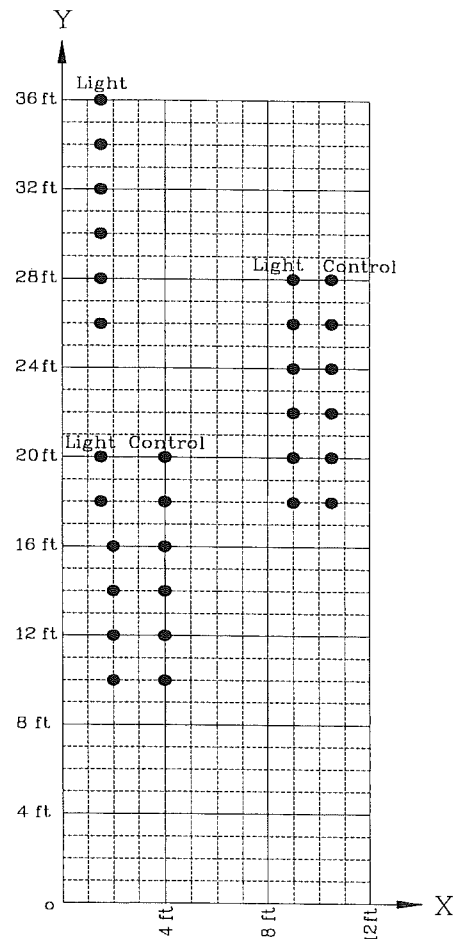
**M-100 N. Bound (South of M-43), Eaton County**

Chart Standard	Density	2617
	Moisture	705
Operating Standard	Density	2608
	Moisture	708

Gauge No.	102420
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 3	
Light		Light		Control	
0136	145.1	0928	143.7	1028	142.4
0134	146.2	0926	144.6	1026	142.9
0132	144.4	0924	145.5	1024	142.8
0130	144.8	0922	144.9	1022	143.1
0128	144.3	0920	145.3	1020	139.8
0126	143.4	0918	145.9	1018	141.4
mean	144.7	mean	145.0	mean	142.1
std	0.93	std	0.78	std	1.26

Sample 4		Sample 5	
Light		Control	
0120	144.5	0420	146.2
0118	143.8	0418	145.4
0216	146.7	0416	146.7
0214	144.1	0414	144.2
0212	146.0	0412	145.2
0210	144.4	0410	144.2
mean	144.9	mean	145.3
std	1.16	std	1.02





# Site 13

North of Rainier Lake Road Paved 1997

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M50 Direction: NB  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High  
Low: a crack with a mean width  $\leq 0.25$  in.  
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High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

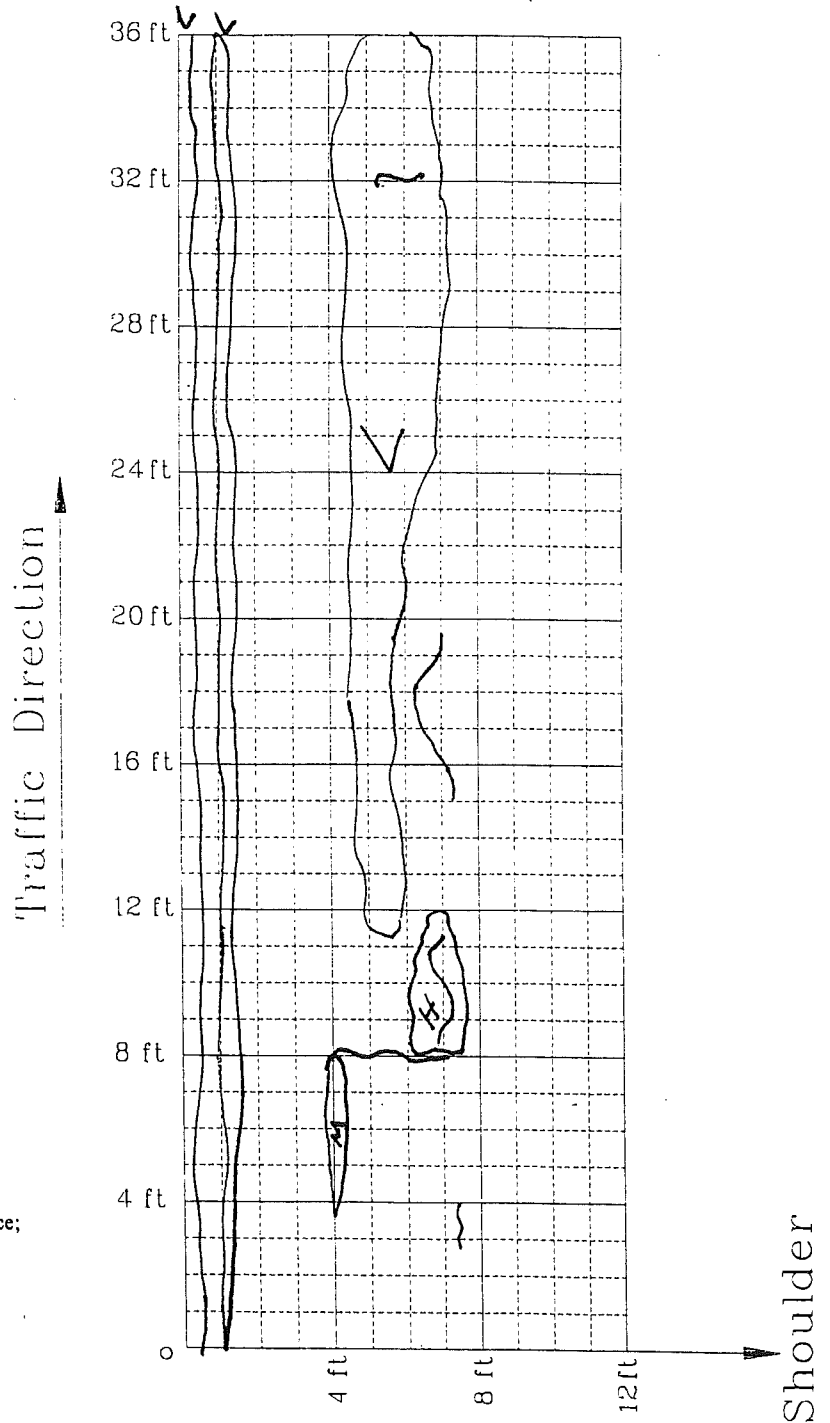
**3. Rut Depth**

**4. Flushing**

Low       Moderate       High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: M50 Direction: NORTH

Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

NORTH OF ROUND LAKE RD-

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Segregation Map**

**Type of Segregation:**

<u>Continuous</u>		
<del>Systematic</del>		
<del>Random</del>		

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High

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Low: a crack with a mean width  $\leq 0.25$  in.

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High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

**3. Rut Depth**

**4. Flushing**

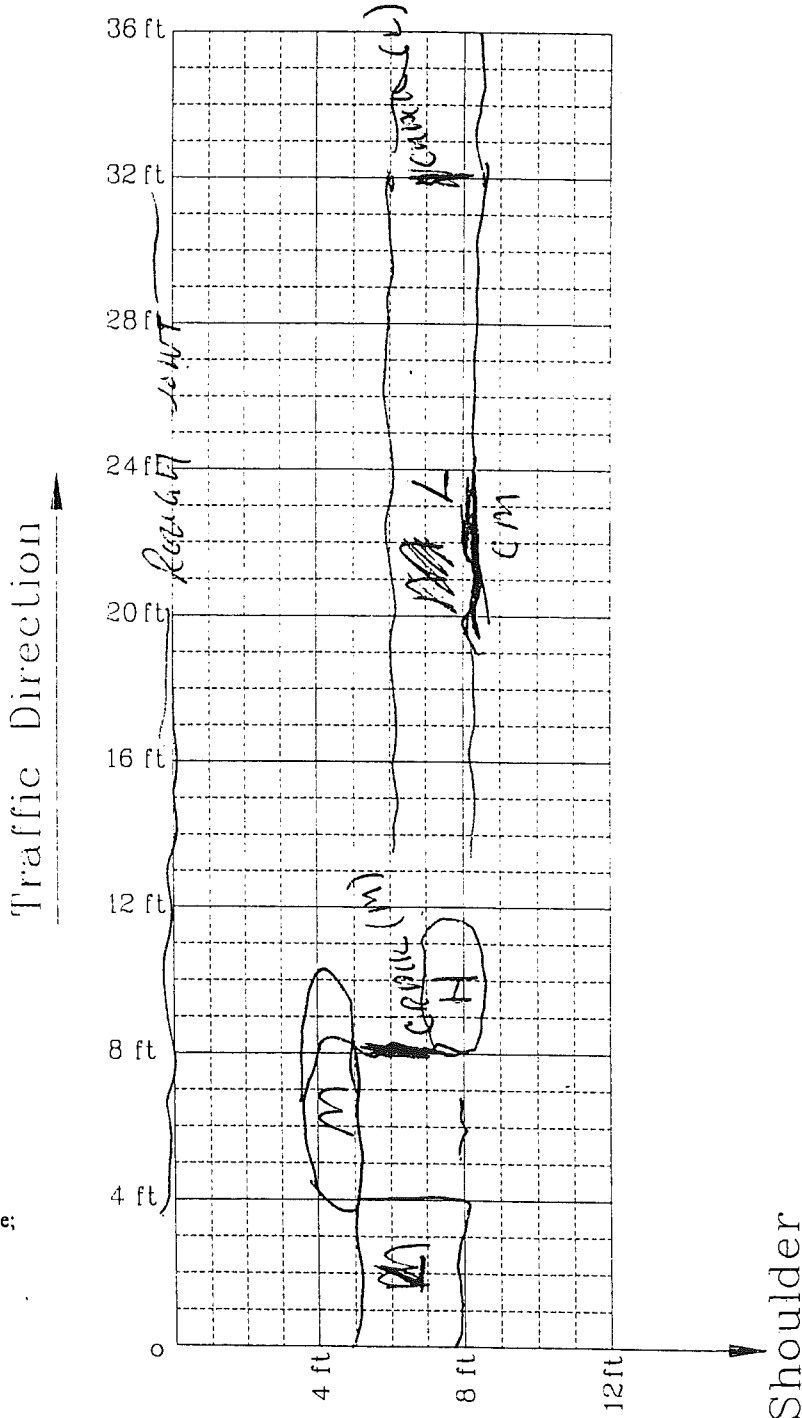
Low       Moderate       High

Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

Moderate: an area of pavement surface that is losing surface texture due to excess asphalt

High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

North of Ramoth Lake Road Paved 1997

# Segregation Survey

Date of Survey: Dec. 9, 1997

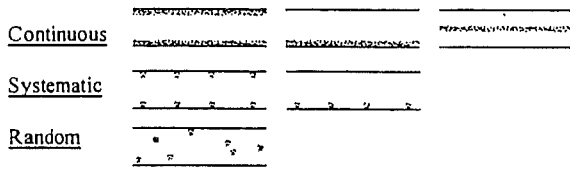
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M50 Direction: NB  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**



**Degree of Segregation**

- Heavy:** stone against stone, little or no matrix (fine)
- Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat
- Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

- Low       Moderate       High
- Low:** aggregate or binder has started to wear away, but not progressed significantly
- Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate
- High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

- Low       Moderate       High
- Low:** a crack with a mean width  $\leq 0.25$  in.
- Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking
- High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

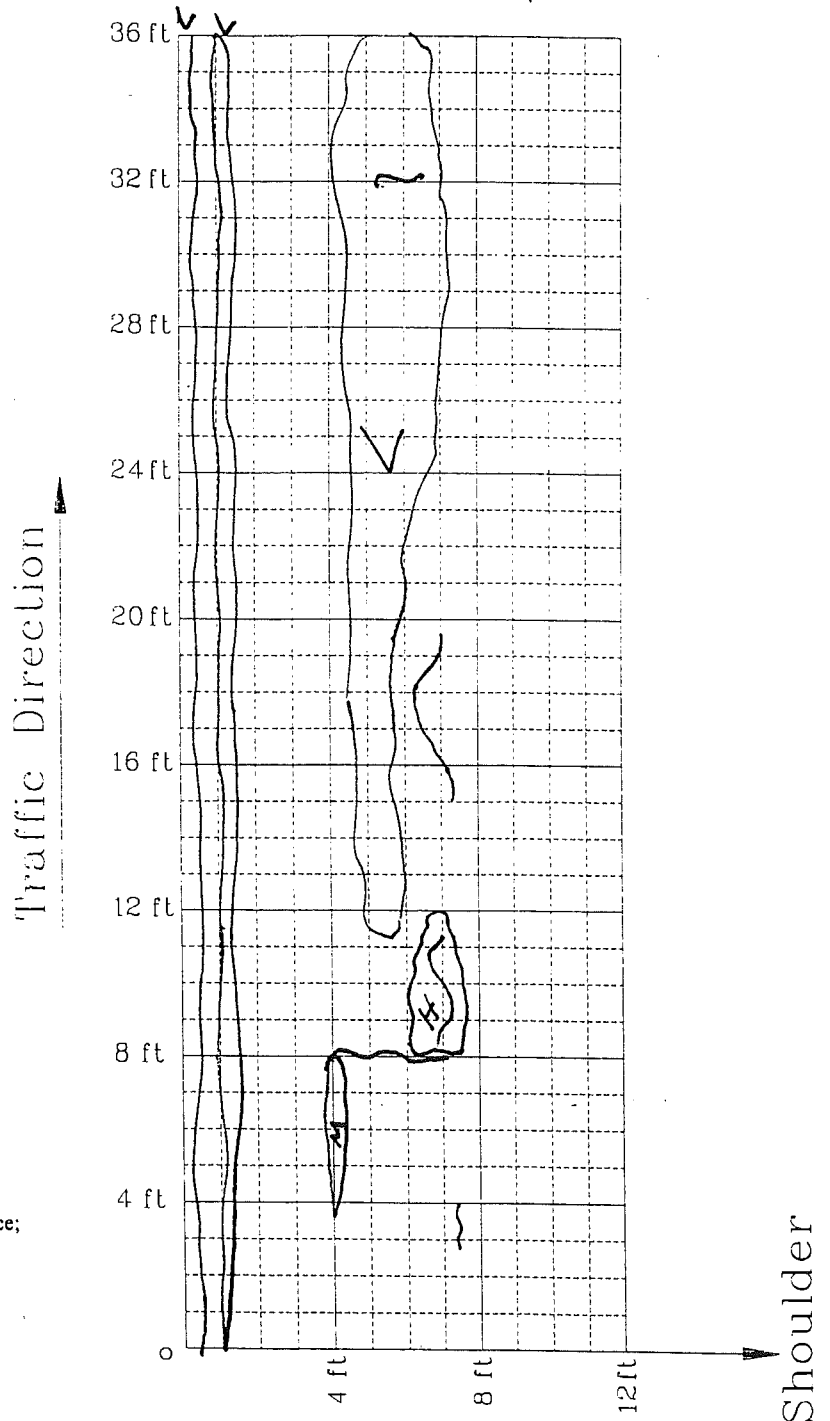
**3. Rut Depth**

**4. Flushing**

- Low       Moderate       High
- Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt
- Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt
- High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M50 Direction: NORTH  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

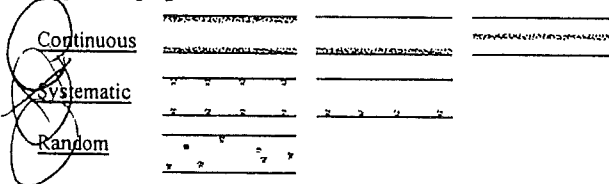
NORTH OF ROUND LAKE RD.

## Segregation Map

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat

**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

Low       Moderate       High

**Low:** aggregate or binder has started to wear away, but not progressed significantly

**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

**High:** aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

#### 2. Cracking

Low       Moderate       High

**Low:** a crack with a mean width  $\leq 0.25$  in.

**Moderate:** a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

**High:** any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

#### 3. Rut Depth

#### 4. Flushing

Low       Moderate       High

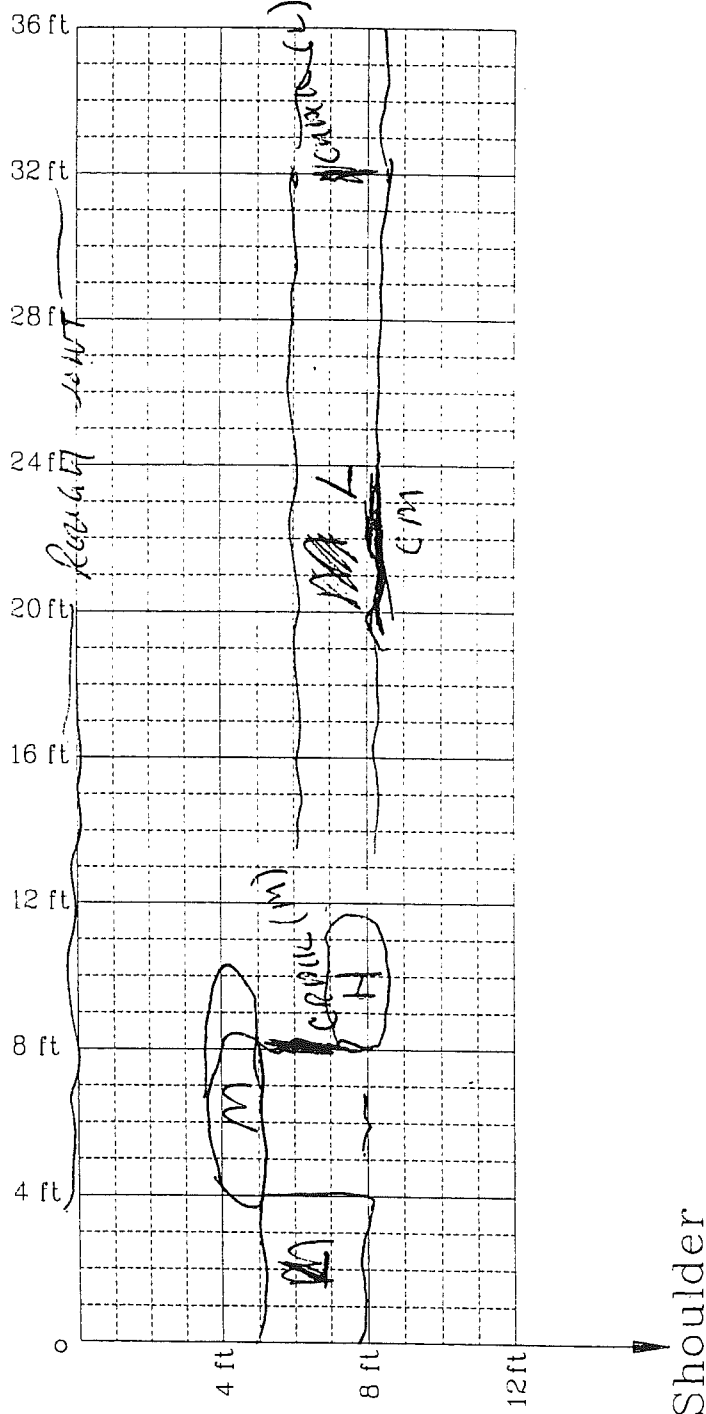
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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**High:** excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

### COMMENTS

Traffic Direction ↑



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

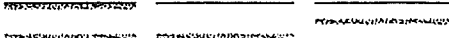
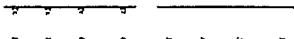
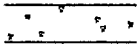
Weather:

Surveyor: \_\_\_\_\_ (your name) *NW*  
 Control Section Number: \_\_\_\_\_ Route: *11-50* Direction: *NW*  
 Region: *UNIVERSITY* Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *13* ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

**Continuous**   
**Systematic**   
**Random** 

**Degree of Segregation**

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low     Moderate     High  
**Low:** aggregate or binder has started to wear away, but not progressed significantly  
**Moderate:** aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
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**2. Cracking**

Low     Moderate     High  
**Low:** a crack with a mean width  $\leq 0.25$  in.  
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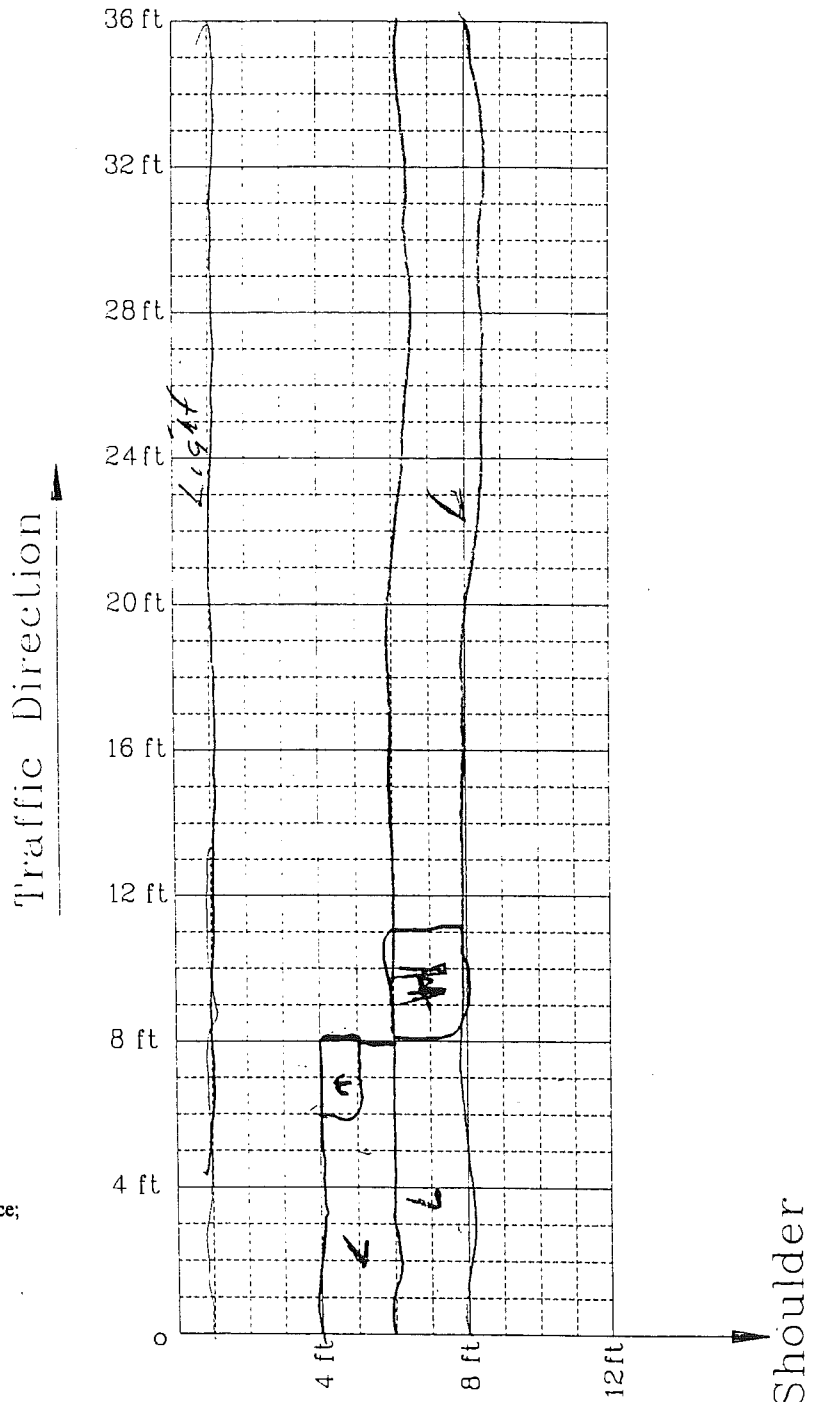
**3. Rut Depth**

**4. Flushing**

Low     Moderate     High  
**Low:** an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
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**COMMENTS**

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

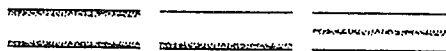
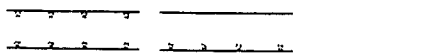

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-50 Direction: N  
 Region: University Mile Post: from W of Round Lake to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous   
Systematic   
Random 

**Degree of Segregation**

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**Distress to be Identified**

**1. Raveling**

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

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**3. Rut Depth**

**4. Flushing**

Low  Moderate  High

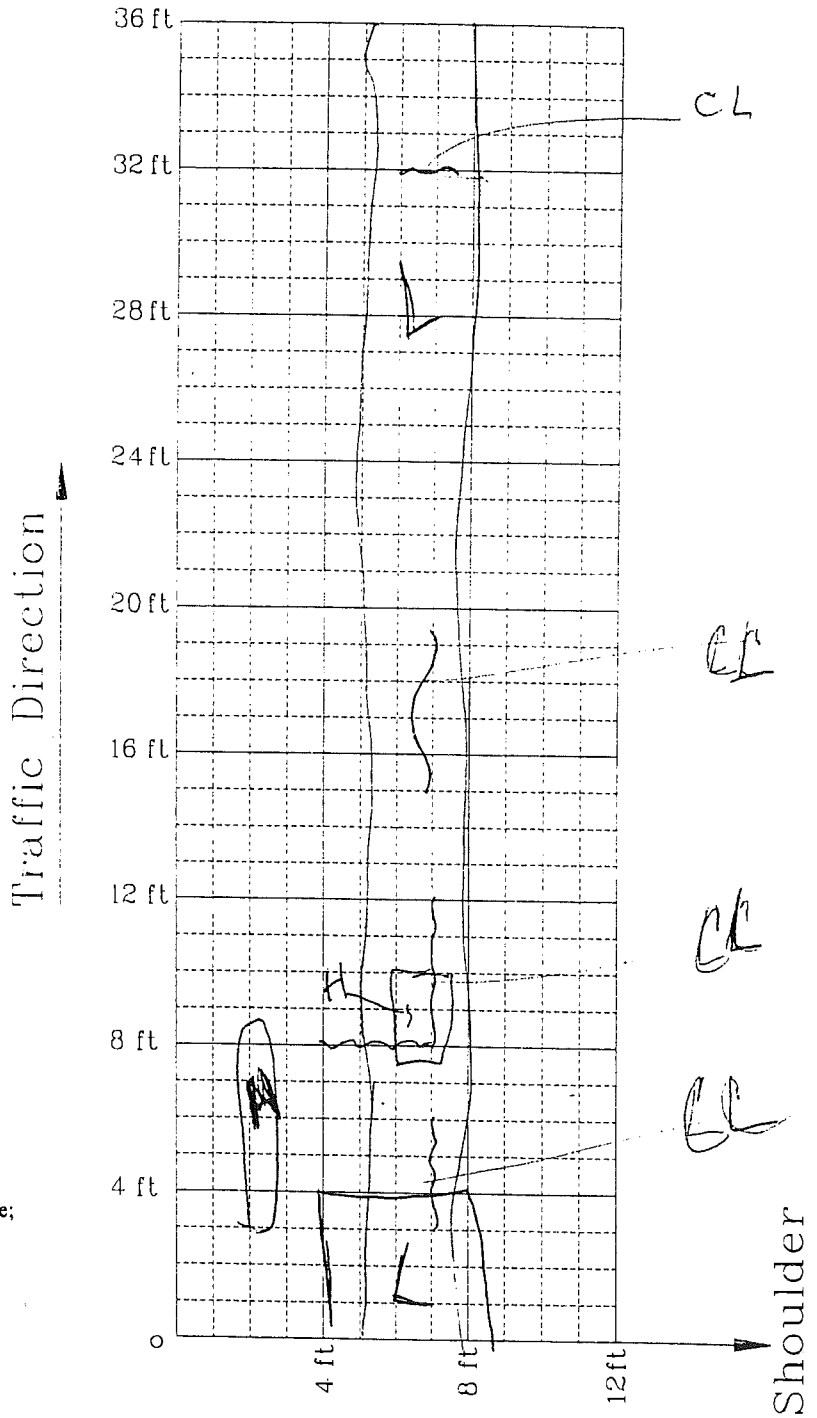
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**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather: Damp = 36°F  
Snow Flurries

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-50 Direction: \_\_\_\_\_  
 Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

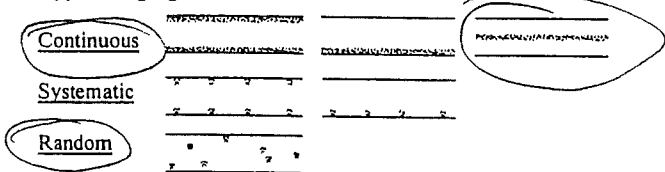
## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

*M.B.*

## Segregation Map

### Type of Segregation:



### Degree of Segregation

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- Low       Moderate       High
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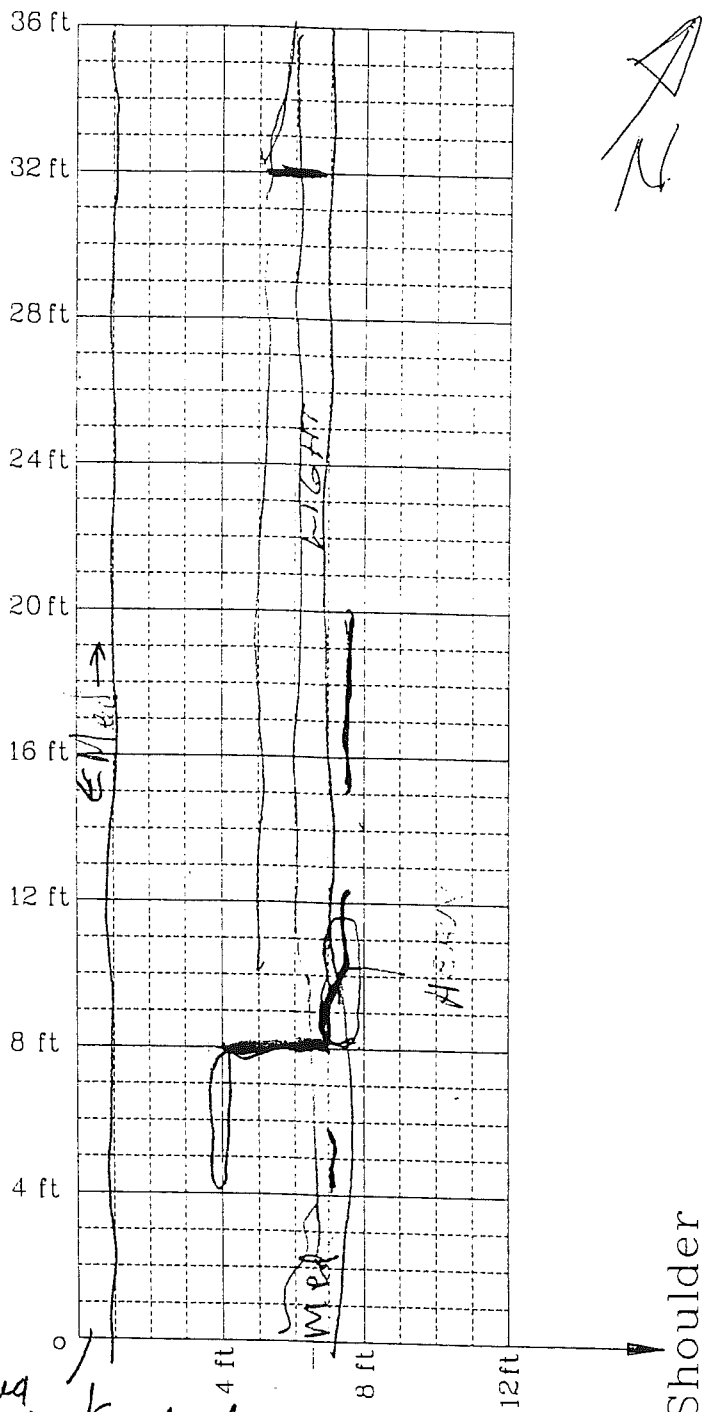
#### 3. Rut Depth

#### 4. Flushing

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### COMMENTS

Traffic Direction



*This area is sued out - of adjustment*

Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather: Overcast Light Snow

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: 231- Route: M-50

N of Round Lake Direction: WB (NB)

Region: UNIVERSITY

Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: #13

ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

Continuous

Systematic

Random

## Degree of Segregation

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

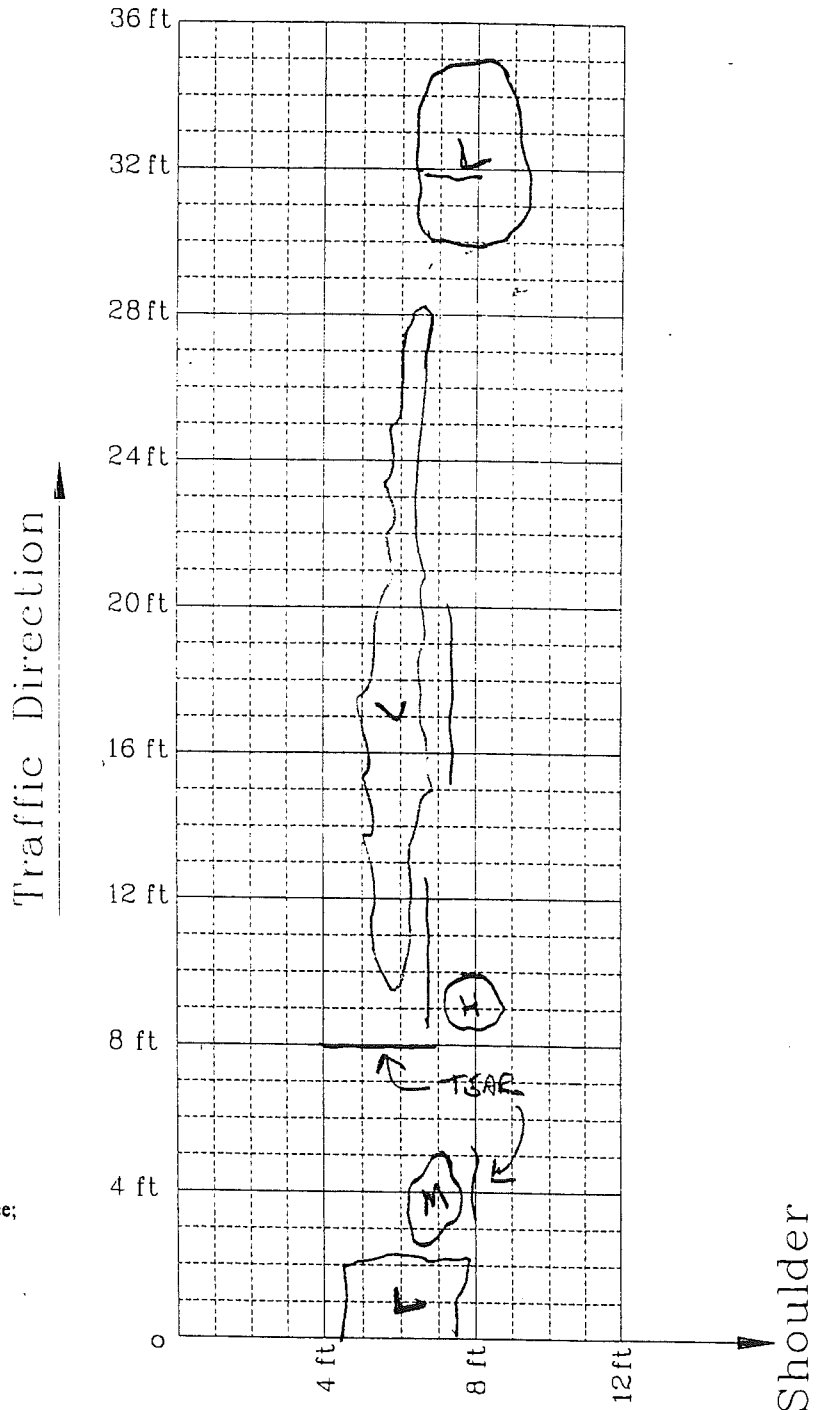
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## COMMENTS

## Segregation Map



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# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: 14-50 Direction: Northbound

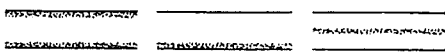
Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

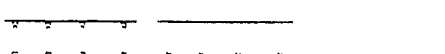
Section Number: \_\_\_\_\_ Test Site Number: 13 ADT: \_\_\_\_\_

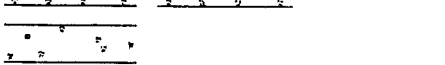
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Systematic 

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

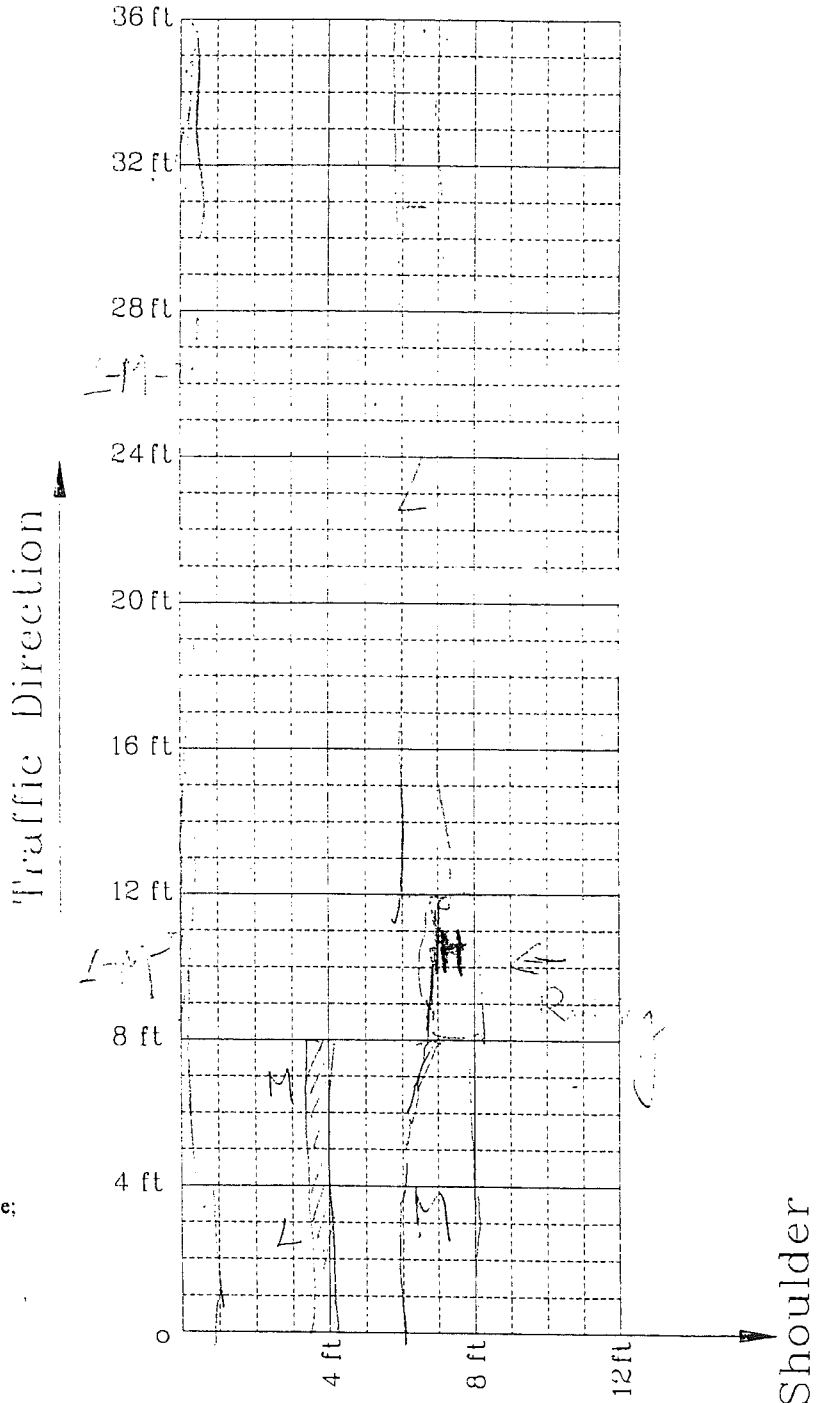
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## COMMENTS

## Segregation Map



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## Nuclear Density Sampling Data (Feb. 13, 1998)

**SITE 13**

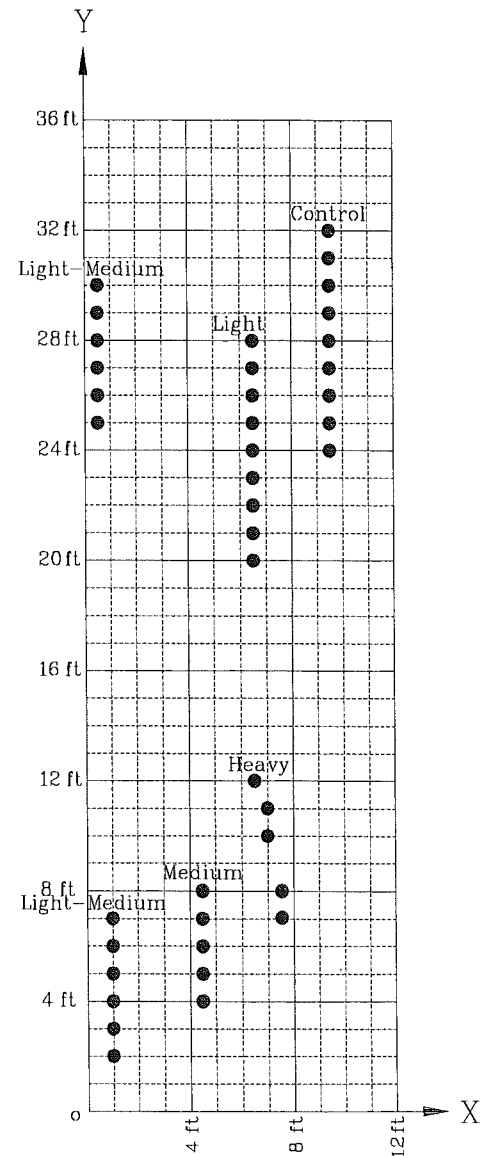
**M-50 N. Bound (350' north of Round Lake Road),  
Eaton County**

Chart Standard	Density	2617
	Moisture	705
Operating Standard	Density	2608
	Moisture	708

Gauge No.	102420
Model	Troxler 3440
Inspector	Joe Badgley

Sample 1		Sample 2		Sample 3	
L-M		Light		Control	
0030	138.7	0628	138.6	932	140.2
0029	139.2	0627	134.1	931	141.4
0028	139.9	0626	136.7	930	142.9
0027	139.4	0625	138.8	929	142.0
0026	138.6	0624	137.4	928	142.6
0025	137.8	0623	136.8	927	143.9
mean	138.9	0622	136.1	926	142.8
std	0.73	0621	136.7	925	141.6
		0620	136.9	924	143.1
		mean	136.9	mean	142.3
		std	1.38	std	1.10

Sample 4		Sample 5		Sample 6	
L-M		Medium		Heavy	
0107	141.1	0408	132.9	0712	137.4
0106	139.4	0407	128.8	0711	137.6
0105	140.0	0406	135.6	0710	136.2
0104	139.7	0405	137.5	0708	133.8
0103	138.9	0404	140.3	0707	134.8
0102	140.4	mean	135.0	mean	136.0
mean	139.9	std	4.40	std	1.65
std	0.77				



## Nuclear Density Sampling Data (April 16, 1998)

**SITE 13**

**M-50 N. Bound (350' north of Round Lake Road),  
Eaton County**

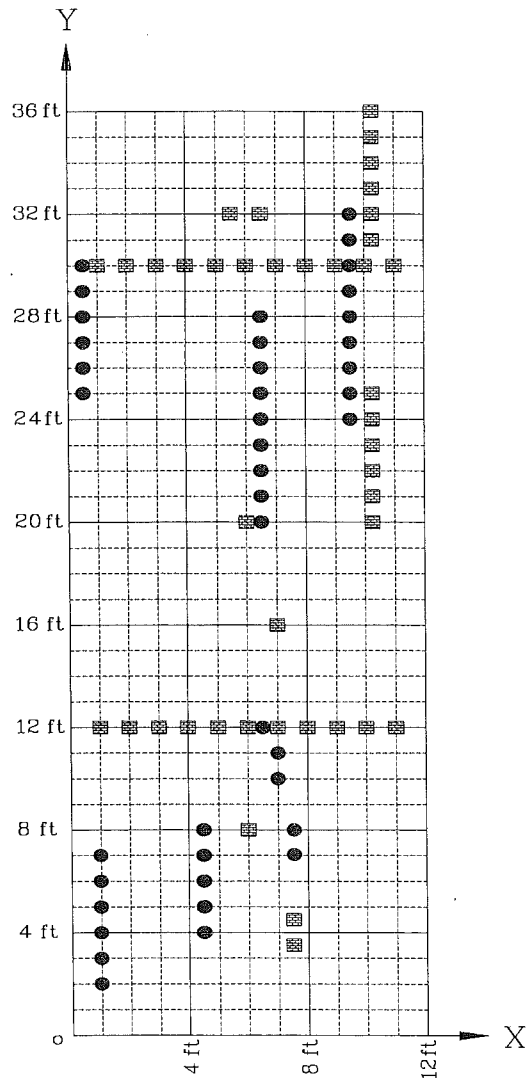
Chart Standard	Density	2863
	Moisture	652
Operating Standard	Density	2882
	Moisture	658

Gauge No.	101953
Model	Troxler 3440
Inspector	Mike Mullikin

Transverse		Transverse	
0112	142.4	0130	139.3
0212	143.9	0230	146.1
0312	144.4	0330	145.2
0412	143.9	0430	144.0
0512	139.2	0530	143.0
0612	138.8	0630	141.0
0712	141.0	0730	144.6
0812	141.5	0830	145.4
0912	145.3	0930	141.4
1012	146.1	1030	142.9
1112	138.7	1130	143.5

Tran. Crack		Control	
0532	137.8	1036	140.2
0632	135.7	1035	141.0
0608	133.6	1034	139.9
		1033	139.6
		1032	139.4
		1031	141.8
		mean	140.3
		std	0.92

Long. Crack		Control	
0705	141.5	1025	141.8
0704	139.7	1024	143.2
0620	142.2	1023	144.4
0716	138.6	1022	145.3
		1021	144.4
		1020	142.0
		mean	143.5
		std	1.42



Date 7/1/98 Highway \_\_\_\_\_  
 Tested By Joel Davenport Site 13  
 Checked By \_\_\_\_\_  
 Remarks \_\_\_\_\_

1	2	3	4	5	6	7	8	9	10
Specimen Number	Course Description	Weight in air (g)	SSD Weight (g)	Weight in water (g)	Volume (SSD) [4-5](cm <sup>3</sup> )	Volume (air) [3-5](cm <sup>3</sup> )	Specific Gravity SSD [4/6]	Specific Gravity air [3/7]	Remarks
0028		1454.2	1455.6	820.0	635.6	634.2	2.290	2.293	
0104		1438.3	1439.3	820.7	618.6	617.6	2.327	2.329	
0620		615.7	617.0	330.1	286.9	285.6	2.151	2.156	
0621		633.9	635.7	346.2	289.5	287.7	2.196	2.203	
0720		875.6	876.7	493.2	383.5	382.4	2.286	2.290	
0929		1619.1	1620.2	934.8	685.4	684.3	2.364	2.366	
0930		1549.6	1550.5	893.2	657.3	656.4	2.359	2.361	
1022		1558.7	1559.9	900.6	659.3	658.1	2.366	2.368	
	7/8/98								
0106		1489.9	1491.3	843.6	647.7	646.3	2.302	2.305	
0624		663.6	664.8	365.0	299.8	298.6	2.217	2.222	
0626		654.9	656.3	362.0	294.3	292.9	2.230	2.236	
0630		1470.4	1472.0	817.7	654.3	652.7	2.250	2.253	
0707		692.8	694.8	383.8	311.0	309.0	2.234	2.242	
0710		641.9	644.3	358.0	286.3	283.9	2.250	2.261	
0930		1374.4	1375.3	793.3	582.0	581.1	2.363	2.365	
1023		1457.6	1458.5	844.0	614.5	613.6	2.373	2.375	



## Sieve Analysis

Weight of bags & soil	1359.4
Weight of soil	1327.9

Weight of empty bags	31.5
----------------------	------

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0102	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	61.7	4.65	4.65	95.35
	3/8 inch	9.50	2.754	81.5	6.14	10.79	89.21
	No. 4	4.75	2.016	266.0	20.04	30.83	69.17
	No. 8	2.37	1.474	186.4	14.04	44.87	55.13
	No. 16	1.18	1.077	153.3	11.55	56.42	43.58
	No. 30	0.60	0.795	159.8	12.04	68.46	31.54
	No. 50	0.30	0.582	228.0	17.18	85.63	14.37
	No. 100	0.15	0.426	123.5	9.30	94.94	5.06
	No. 200	0.08	0.312	45.4	3.42	98.36	1.64
		Pan			21.8	1.64	100.00
			Total weight	1327.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	3126.7
Date	7/30/98	Weight of tear	1799.4
Remarks		Weight of soil	1327.3

## Sieve Analysis

Weight of bags & soil	703.0
Weight of soil	687.2

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0102 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	32.5	4.73	4.73	95.27
	3/8 inch	9.50	2.754	43.3	6.31	11.04	88.96
	No. 4	4.75	2.016	140.0	20.39	31.43	68.57
	No. 8	2.37	1.474	95.0	13.83	45.26	54.74
	No. 16	1.18	1.077	82.3	11.98	57.24	42.76
	No. 30	0.60	0.795	86.4	12.58	69.83	30.17
	No. 50	0.30	0.582	118.1	17.20	87.02	12.98
	No. 100	0.15	0.426	57.8	8.42	95.44	4.56
	No. 200	0.08	0.312	21.7	3.16	98.60	1.40
		Pan			9.6	1.40	100.00
			Total weight	686.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	1586.4
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	686.7



## Sieve Analysis

Weight of bags & soil	656.4
Weight of soil	640.7

Weight of empty bags	15.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
0102	1/2 inch	12.50	3.116	29.2	4.56	4.56	95.44	
(light)	3/8 inch	9.50	2.754	38.2	5.96	10.52	89.48	
	No. 4	4.75	2.016	126.0	19.67	30.19	69.81	
	No. 8	2.37	1.474	91.4	14.27	44.45	55.55	
	No. 16	1.18	1.077	71.0	11.08	55.53	44.47	
	No. 30	0.60	0.795	73.4	11.46	66.99	33.01	
	No. 50	0.30	0.582	109.9	17.15	84.14	15.86	
	No. 100	0.15	0.426	65.7	10.25	94.40	5.60	
	No. 200	0.08	0.312	23.7	3.70	98.10	1.90	
	Pan			12.2	1.90	100.00	0.00	
			Total weight	640.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	1540.3
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	640.6

## Sieve Analysis

Weight of bags & soil	1327.7
Weight of soil	1292.5

Weight of empty bags	35.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0104	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	49.8	3.85	3.85	96.15
	3/8 inch	9.50	2.754	59.4	4.60	8.45	91.55
	No. 4	4.75	2.016	259.4	20.08	28.53	71.47
	No. 8	2.37	1.474	190.1	14.71	43.24	56.76
	No. 16	1.18	1.077	147.0	11.38	54.62	45.38
	No. 30	0.60	0.795	156.8	12.14	66.75	33.25
	No. 50	0.30	0.582	247.3	19.14	85.89	14.11
	No. 100	0.15	0.426	119.8	9.27	95.16	4.84
	No. 200	0.08	0.312	40.3	3.12	98.28	1.72
	Pan			22.2	1.72	100.00	0.00
			Total weight	1292.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	3091.4
Date	7/17/98	Weight of tear	1799.6
Remarks		Weight of soil	1291.8

## Sieve Analysis

Weight of bags & soil	661.0
Weight of soil	643.4

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0104 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	26.5	4.12	4.12	95.88	
	3/8 inch	9.50	2.754	36.0	5.60	9.72	90.28	
	No. 4	4.75	2.016	124.0	19.28	28.99	71.01	
	No. 8	2.37	1.474	94.2	14.64	43.63	56.37	
	No. 16	1.18	1.077	74.4	11.57	55.20	44.80	
	No. 30	0.60	0.795	75.8	11.78	66.98	33.02	
	No. 50	0.30	0.582	127.9	19.88	86.86	13.14	
	No. 100	0.15	0.426	56.7	8.81	95.68	4.32	
	No. 200	0.08	0.312	19.9	3.09	98.77	1.23	
		Pan			7.9	1.23	100.00	0.00
			Total	643.3	100.00			
			weight					

Operator	Joel Davenport	Weight of tear & soil	1542.9
Date	7/17/98	Weight of tear	899.8
Remarks		Weight of soil	643.1

## Sieve Analysis

Weight of bags & soil	666.7
Weight of soil	649.1

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0104 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	23.3	3.59	3.59	96.41
	3/8 inch	9.50	2.754	23.4	3.61	7.20	92.80
	No. 4	4.75	2.016	135.4	20.87	28.07	71.93
	No. 8	2.37	1.474	95.9	14.78	42.85	57.15
	No. 16	1.18	1.077	72.6	11.19	54.04	45.96
	No. 30	0.60	0.795	81.0	12.48	66.52	33.48
	No. 50	0.30	0.582	119.4	18.40	84.93	15.07
	No. 100	0.15	0.426	63.1	9.73	94.65	5.35
	No. 200	0.08	0.312	20.4	3.14	97.80	2.20
		Pan			14.3	2.20	100.00
			Total	648.8	100.00		
			weight				

Operator	Joel Davenport	Weight of tear & soil	1548.5
Date	7/17/98	Weight of tear	899.8
Remarks		Weight of soil	648.7

## Sieve Analysis

Weight of bags & soil	1396.5
Weight of soil	1380.8

Weight of empty bags	15.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0106	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	68.2	4.94	4.94	95.06
	3/8 inch	9.50	2.754	71.3	5.17	10.11	89.89
	No. 4	4.75	2.016	270.8	19.62	29.73	70.27
	No. 8	2.37	1.474	198.9	14.41	44.14	55.86
	No. 16	1.18	1.077	186.7	13.53	57.67	42.33
	No. 30	0.60	0.795	239.9	17.38	75.05	24.95
	No. 50	0.30	0.582	189.9	13.76	88.81	11.19
	No. 100	0.15	0.426	105.3	7.63	96.44	3.56
	No. 200	0.08	0.312	29.5	2.14	98.57	1.43
		Pan			19.7	1.43	100.00
				Total weight	1380.2	100.00	

Operator	Joel Davenport	Weight of tear & soil	2279.9
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	1380.2

## Sieve Analysis

Weight of bags & soil	1349.9
Weight of soil	1334.1

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 13 0026	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	115.7	8.68	8.68	91.32	
	3/8 inch	9.50	2.754	61.2	4.59	13.26	86.74	
	No. 4	4.75	2.016	252.0	18.89	32.16	67.84	
	No. 8	2.37	1.474	181.4	13.60	45.76	54.24	
	No. 16	1.18	1.077	181.2	13.59	59.35	40.65	
	No. 30	0.60	0.795	219.7	16.47	75.82	24.18	
	No. 50	0.30	0.582	189.1	14.18	90.00	10.00	
	No. 100	0.15	0.426	87.7	6.58	96.57	3.43	
	No. 200	0.08	0.312	32.4	2.43	99.00	1.00	
		Pan			13.3	1.00	100.00	0.00
			Total weight	1333.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	2233.4
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	1333.7

## Sieve Analysis

Weight of empty bags      17.5

Weight of bags & soil      1369.1  
 Weight of soil              1351.6

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 13 0028	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	69.6	5.15	5.15	94.85	
	3/8 inch	9.50	2.754	93.1	6.89	12.04	87.96	
	No. 4	4.75	2.016	273.2	20.22	32.27	67.73	
	No. 8	2.37	1.474	182.6	13.52	45.78	54.22	
	No. 16	1.18	1.077	150.3	11.13	56.91	43.09	
	No. 30	0.60	0.795	199.2	14.75	71.66	28.34	
	No. 50	0.30	0.582	211.4	15.65	87.30	12.70	
	No. 100	0.15	0.426	114.2	8.45	95.76	4.24	
	No. 200	0.08	0.312	37.8	2.80	98.56	1.44	
		Pan			19.5	1.44	100.00	0.00
			Total weight	1350.9	100.00			

Operator	Joel Davenport	Weight of tear & soil	2250.6
Date	7/17/98	Weight of tear	899.8
Remarks		Weight of soil	1350.8

## Sieve Analysis

Weight of bags & soil	1379.6
Weight of soil	1363.8

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0030	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	82.3	6.04	6.04	93.96	
	3/8 inch	9.50	2.754	90.2	6.62	12.65	87.35	
	No. 4	4.75	2.016	287.2	21.07	33.72	66.28	
	No. 8	2.37	1.474	184.7	13.55	47.27	52.73	
	No. 16	1.18	1.077	184.3	13.52	60.80	39.20	
	No. 30	0.60	0.795	219.0	16.07	76.86	23.14	
	No. 50	0.30	0.582	165.7	12.16	89.02	10.98	
	No. 100	0.15	0.426	92.9	6.82	95.83	4.17	
	No. 200	0.08	0.312	34.4	2.52	98.36	1.64	
		Pan			22.4	1.64	100.00	0.00
				Total weight	1363.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	2262.7
Date	8/4/98	Weight of tear	899.7
Remarks		Weight of soil	1363.0



## Sieve Analysis

Weight of bags & soil	763.5
Weight of soil	732.0

Weight of empty bags	31.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0405	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	46.4	6.34	6.34	93.66
	3/8 inch	9.50	2.754	63.8	8.72	15.06	84.94
	No. 4	4.75	2.016	157.0	21.45	36.51	63.49
	No. 8	2.37	1.474	90.6	12.38	48.89	51.11
	No. 16	1.18	1.077	67.9	9.28	58.17	41.83
	No. 30	0.60	0.795	70.3	9.61	67.78	32.22
	No. 50	0.30	0.582	106.8	14.59	82.37	17.63
	No. 100	0.15	0.426	84.1	11.49	93.86	6.14
	No. 200	0.08	0.312	30.5	4.17	98.03	1.97
		Pan			14.4	1.97	100.00
			Total weight	731.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2531.0
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	1631.3

## Sieve Analysis

Weight of bags & soil	358.9
Weight of soil	343.1

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0405 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	30.2	8.80	8.80	91.20
	3/8 inch	9.50	2.754	39.3	11.45	20.26	79.74
	No. 4	4.75	2.016	74.5	21.71	41.97	58.03
	No. 8	2.37	1.474	38.1	11.10	53.07	46.93
	No. 16	1.18	1.077	28.7	8.36	61.44	38.56
	No. 30	0.60	0.795	30.0	8.74	70.18	29.82
	No. 50	0.30	0.582	44.6	13.00	83.18	16.82
	No. 100	0.15	0.426	37.1	10.81	94.00	6.00
	No. 200	0.08	0.312	12.9	3.76	97.76	2.24
	Pan			7.7	2.24	100.00	0.00
			Total weight	343.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	1242.7
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	343.0

## Sieve Analysis

Weight of bags & soil	404.6
Weight of soil	388.9

Weight of empty bags	15.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0405 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	16.2	4.17	4.17	95.83
	3/8 inch	9.50	2.754	24.5	6.30	10.47	89.53
	No. 4	4.75	2.016	82.5	21.22	31.70	68.30
	No. 8	2.37	1.474	52.5	13.51	45.20	54.80
	No. 16	1.18	1.077	39.2	10.08	55.29	44.71
	No. 30	0.60	0.795	40.3	10.37	65.65	34.35
	No. 50	0.30	0.582	62.2	16.00	81.66	18.34
	No. 100	0.15	0.426	47.0	12.09	93.75	6.25
	No. 200	0.08	0.312	17.6	4.53	98.28	1.72
		Pan			6.7	1.72	100.00
				Total weight	388.7	100.00	

Operator	Joel Davenport	Weight of tear & soil	1288.3
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	388.6

## Sieve Analysis

Weight of bags & soil	777.6
Weight of soil	746.2

Weight of empty bags	31.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0406	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	32.9	4.41	4.41	95.59
	3/8 inch	9.50	2.754	46.8	6.28	10.69	89.31
	No. 4	4.75	2.016	191.3	25.65	36.34	63.66
	No. 8	2.37	1.474	93.4	12.52	48.86	51.14
	No. 16	1.18	1.077	69.5	9.32	58.18	41.82
	No. 30	0.60	0.795	72.6	9.73	67.91	32.09
	No. 50	0.30	0.582	113.9	15.27	83.19	16.81
	No. 100	0.15	0.426	74.0	9.92	93.11	6.89
	No. 200	0.08	0.312	35.6	4.77	97.88	2.12
		Pan			15.8	2.12	100.00
			Total weight	745.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2545.4
Date	7/23/98	Weight of tear	1799.4
Remarks		Weight of soil	746.0

## Sieve Analysis

Weight of bags & soil	373.2
Weight of soil	357.4

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
0406 (heavy)	1/2 inch	12.50	3.116	11.0	3.08	3.08	96.92	
	3/8 inch	9.50	2.754	16.6	4.65	7.72	92.28	
	No. 4	4.75	2.016	88.5	24.77	32.49	67.51	
	No. 8	2.37	1.474	46.2	12.93	45.42	54.58	
	No. 16	1.18	1.077	36.3	10.16	55.58	44.42	
	No. 30	0.60	0.795	36.7	10.27	65.86	34.14	
	No. 50	0.30	0.582	57.2	16.01	81.86	18.14	
	No. 100	0.15	0.426	36.9	10.33	92.19	7.81	
No. 200	0.08	0.312	18.5	5.18	97.37	2.63		
	Pan			9.4	2.63	100.00	0.00	
			Total weight	357.3	100.00			

Operator	Joel Davenport	Weight of tear & soil	1257.1
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	357.4

## Sieve Analysis

Weight of bags & soil	404.4
Weight of soil	388.8
Weight of empty bags	15.6

Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0406 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	21.9	5.64	5.64	94.36
	3/8 inch	9.50	2.754	30.2	7.77	13.41	86.59
	No. 4	4.75	2.016	102.8	26.46	39.87	60.13
	No. 8	2.37	1.474	47.2	12.15	52.02	47.98
	No. 16	1.18	1.077	33.2	8.55	60.57	39.43
	No. 30	0.60	0.795	35.9	9.24	69.81	30.19
	No. 50	0.30	0.582	56.7	14.59	84.40	15.60
	No. 100	0.15	0.426	37.1	9.55	93.95	6.05
	No. 200	0.08	0.312	17.1	4.40	98.35	1.65
	Pan			6.4	1.65	100.00	0.00
			Total weight	388.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	1288.3
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	388.6

## Sieve Analysis

Weight of bags & soil	989.7
Weight of soil	974.1

Weight of empty bags	15.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0408	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	39.4	4.05	4.05	95.95	
	3/8 inch	9.50	2.754	41.5	4.26	8.31	91.69	
	No. 4	4.75	2.016	200.8	20.64	28.95	71.05	
	No. 8	2.37	1.474	137.9	14.17	43.12	56.88	
	No. 16	1.18	1.077	124.5	12.79	55.91	44.09	
	No. 30	0.60	0.795	157.9	16.23	72.14	27.86	
	No. 50	0.30	0.582	136.6	14.04	86.18	13.82	
	No. 100	0.15	0.426	83.5	8.58	94.76	5.24	
	No. 200	0.08	0.312	36.7	3.77	98.53	1.47	
		Pan			14.3	1.47	100.00	0.00
			Total weight	973.1	100.00			

Operator	Joel Davenport	Weight of tear & soil	1873.0
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	973.3

## Sieve Analysis

Weight of bags & soil	806.8
Weight of soil	791.1
	Weight of empty bags
	15.7

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 13 0532	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	24.7	3.12	3.12	96.88	
	3/8 inch	9.50	2.754	38.6	4.88	8.00	92.00	
	No. 4	4.75	2.016	159.8	20.20	28.20	71.80	
	No. 8	2.37	1.474	113.5	14.35	42.55	57.45	
	No. 16	1.18	1.077	91.1	11.52	54.07	45.93	
	No. 30	0.60	0.795	109.2	13.81	67.88	32.12	
	No. 50	0.30	0.582	123.2	15.58	83.45	16.55	
	No. 100	0.15	0.426	84.0	10.62	94.07	5.93	
	No. 200	0.08	0.312	26.8	3.39	97.46	2.54	
		Pan			20.1	2.54	100.00	0.00
			Total weight	791.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	1690.5
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	790.8



## Sieve Analysis

Weight of bags & soil	650.4
Weight of soil	632.9

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0608	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	27.9	4.41	4.41	95.59	
	3/8 inch	9.50	2.754	26.1	4.13	8.54	91.46	
	No. 4	4.75	2.016	117.7	18.61	27.15	72.85	
	No. 8	2.37	1.474	86.7	13.71	40.87	59.13	
	No. 16	1.18	1.077	72.6	11.48	52.35	47.65	
	No. 30	0.60	0.795	84.2	13.32	65.67	34.33	
	No. 50	0.30	0.582	126.7	20.04	85.70	14.30	
	No. 100	0.15	0.426	55.8	8.82	94.53	5.47	
	No. 200	0.08	0.312	26.6	4.21	98.73	1.27	
		Pan			8.0	1.27	100.00	0.00
			Total weight	632.3	100.00			

Operator	Joel Davenport	Weight of tear & soil	1532.1
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	632.4

## Sieve Analysis

Weight of bags & soil	583.6
Weight of soil	548.4

Weight of empty bags	35.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Cum. % retained	Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Percent retained		
Site 13 0620	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	3.6	0.66	0.66	99.34	
	3/8 inch	9.50	2.754	18.0	3.29	3.94	96.06	
	No. 4	4.75	2.016	97.0	17.71	21.65	78.35	
	No. 8	2.37	1.474	77.5	14.15	35.80	64.20	
	No. 16	1.18	1.077	63.9	11.67	47.47	52.53	
	No. 30	0.60	0.795	71.2	13.00	60.47	39.53	
	No. 50	0.30	0.582	115.8	21.14	81.61	18.39	
	No. 100	0.15	0.426	64.8	11.83	93.45	6.55	
	No. 200	0.08	0.312	26.9	4.91	98.36	1.64	
		Pan			9.0	1.64	100.00	0.00
				Total weight	547.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	2347.2
Date	7/23/98	Weight of tear	1799.4
Remarks		Weight of soil	547.8

## Sieve Analysis

Weight of bags & soil	297.6
Weight of soil	380.0

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0620 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	3.6	1.29	1.29	98.71	
	3/8 inch	9.50	2.754	8.5	3.04	4.33	95.67	
	No. 4	4.75	2.016	50.0	17.88	22.20	77.80	
	No. 8	2.37	1.474	38.2	13.66	35.86	64.14	
	No. 16	1.18	1.077	32.6	11.66	47.52	52.48	
	No. 30	0.60	0.795	36.2	12.94	60.46	39.54	
	No. 50	0.30	0.582	56.7	20.27	80.73	19.27	
	No. 100	0.15	0.426	32.7	11.69	92.42	7.58	
	No. 200	0.08	0.312	15.4	5.51	97.93	2.07	
		Pan			5.8	2.07	100.00	0.00
			Total weight	279.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	1179.4
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	279.7

## Sieve Analysis

Weight of bags & soil	286.0
Weight of soil	268.4

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0620 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	0.0	0.00	0.00	100.00
	3/8 inch	9.50	2.754	9.5	3.54	3.54	96.46
	No. 4	4.75	2.016	47.0	17.54	21.08	78.92
	No. 8	2.37	1.474	39.3	14.66	35.75	64.25
	No. 16	1.18	1.077	31.3	11.68	47.43	52.57
	No. 30	0.60	0.795	35.0	13.06	60.49	39.51
	No. 50	0.30	0.582	59.1	22.05	82.54	17.46
	No. 100	0.15	0.426	32.1	11.98	94.51	5.49
	No. 200	0.08	0.312	11.5	4.29	98.81	1.19
				3.2	1.19	100.00	0.00
			Total weight	268.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	1167.8
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	268.1

## Sieve Analysis

Weight of bags & soil	605.1
Weight of soil	569.9

Weight of empty bags	35.2
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 13 0621	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	17.7	3.11	3.11	96.89	
	3/8 inch	9.50	2.754	35.3	6.21	9.32	90.68	
	No. 4	4.75	2.016	130.7	22.98	32.30	67.70	
	No. 8	2.37	1.474	72.5	12.75	45.04	54.96	
	No. 16	1.18	1.077	58.5	10.28	55.33	44.67	
	No. 30	0.60	0.795	59.2	10.41	65.73	34.27	
	No. 50	0.30	0.582	105.2	18.50	84.23	15.77	
	No. 100	0.15	0.426	55.3	9.72	93.95	6.05	
	No. 200	0.08	0.312	25.8	4.54	98.49	1.51	
	Pan			8.6	1.51	100.00	0.00	
			Total weight	568.8	100.00			

Operator	Joel Davenport	Weight of tear & soil	2368.4
Date	7/23/98	Weight of tear	1799.4
Remarks		Weight of soil	569.0

## Sieve Analysis

Weight of empty bags 17.6

Weight of bags & soil 309.7  
Weight of soil 292.1

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0621 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	5.8	1.99	1.99	98.01
	3/8 inch	9.50	2.754	15.1	5.18	7.17	92.83
	No. 4	4.75	2.016	74.7	25.64	32.82	67.18
	No. 8	2.37	1.474	38.7	13.29	46.10	53.90
	No. 16	1.18	1.077	29.9	10.26	56.37	43.63
	No. 30	0.60	0.795	29.4	10.09	66.46	33.54
	No. 50	0.30	0.582	51.7	17.75	84.21	15.79
	No. 100	0.15	0.426	29.2	10.02	94.23	5.77
	No. 200	0.08	0.312	12.8	4.39	98.63	1.37
		Pan			4.0	1.37	100.00
			Total weight	291.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	1191.1
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	291.4

## Sieve Analysis

Weight of bags & soil	295.4
Weight of soil	277.8

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0621 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	11.9	4.29	4.29	95.71	
	3/8 inch	9.50	2.754	20.2	7.28	11.57	88.43	
	No. 4	4.75	2.016	56.0	20.18	31.75	68.25	
	No. 8	2.37	1.474	33.8	12.18	43.93	56.07	
	No. 16	1.18	1.077	28.6	10.31	54.23	45.77	
	No. 30	0.60	0.795	29.8	10.74	64.97	35.03	
	No. 50	0.30	0.582	53.5	19.28	84.25	15.75	
	No. 100	0.15	0.426	26.1	9.41	93.66	6.34	
	No. 200	0.08	0.312	13.0	4.68	98.34	1.66	
		Pan			4.6	1.66	100.00	0.00
			Total weight	277.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	1177.3
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	277.6

## Sieve Analysis

Weight of bags & soil	534.7
Weight of soil	518.8

Weight of empty bags	15.9
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0622	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	26.7	5.15	5.15	94.85
	3/8 inch	9.50	2.754	33.0	6.36	11.51	88.49
	No. 4	4.75	2.016	102.9	19.85	31.36	68.64
	No. 8	2.37	1.474	68.0	13.11	44.47	55.53
	No. 16	1.18	1.077	55.1	10.63	55.10	44.90
	No. 30	0.60	0.795	56.3	10.86	65.96	34.04
	No. 50	0.30	0.582	101.4	19.56	85.52	14.48
	No. 100	0.15	0.426	50.0	9.64	95.16	4.84
	No. 200	0.08	0.312	18.5	3.57	98.73	1.27
		Pan			6.6	1.27	100.00
			Total weight	518.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	1418.2
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	518.5



# Sieve Analysis

Weight of bags & soil	630.9
Weight of soil	615.1

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0624	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	27.2	4.42	4.42	95.58	
	3/8 inch	9.50	2.754	18.3	2.98	7.40	92.60	
	No. 4	4.75	2.016	127.5	20.74	28.14	71.86	
	No. 8	2.37	1.474	83.5	13.58	41.72	58.28	
	No. 16	1.18	1.077	71.5	11.63	53.35	46.65	
	No. 30	0.60	0.795	89.5	14.56	67.91	32.09	
	No. 50	0.30	0.582	118.5	19.27	87.18	12.82	
	No. 100	0.15	0.426	48.9	7.95	95.14	4.86	
	No. 200	0.08	0.312	18.4	2.99	98.13	1.87	
		Pan			11.5	1.87	100.00	0.00
			Total weight	614.8	100.00			

Operator	Joel Davenport	Weight of tear & soil	1514.5
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	614.8

## Sieve Analysis

Weight of bags & soil	645.2
Weight of soil	614.2

Weight of empty bags	31.0
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0625	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	11.7	1.91	1.91	98.09	
	3/8 inch	9.50	2.754	46.8	7.63	9.54	90.46	
	No. 4	4.75	2.016	127.5	20.79	30.33	69.67	
	No. 8	2.37	1.474	83.5	13.61	43.94	56.06	
	No. 16	1.18	1.077	64.7	10.55	54.49	45.51	
	No. 30	0.60	0.795	66.1	10.78	65.27	34.73	
	No. 50	0.30	0.582	107.2	17.48	82.75	17.25	
	No. 100	0.15	0.426	66.3	10.81	93.56	6.44	
	No. 200	0.08	0.312	30.0	4.89	98.45	1.55	
		Pan			9.5	1.55	100.00	0.00
			Total weight	613.3	100.00			

Operator	Joel Davenport	Weight of tear & soil	2412.9
Date	7/23/98	Weight of tear	1799.4
Remarks		Weight of soil	613.5

## Sieve Analysis

Weight of bags & soil	326.8
Weight of soil	311.4

Weight of empty bags	15.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0625 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	3.8	1.22	1.22	98.78	
	3/8 inch	9.50	2.754	31.7	10.20	11.42	88.58	
	No. 4	4.75	2.016	57.9	18.62	30.04	69.96	
	No. 8	2.37	1.474	45.2	14.54	44.58	55.42	
	No. 16	1.18	1.077	32.2	10.36	54.94	45.06	
	No. 30	0.60	0.795	32.2	10.36	65.29	34.71	
	No. 50	0.30	0.582	52.1	16.76	82.05	17.95	
	No. 100	0.15	0.426	34.9	11.23	93.28	6.72	
	No. 200	0.08	0.312	15.5	4.99	98.26	1.74	
	Pan			5.4	1.74	100.00	0.00	
			Total weight	310.9	100.00			

Operator	Joel Davenport	Weight of tear & soil	1210.7
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	311.0

## Sieve Analysis

Weight of bags & soil	318.4
Weight of soil	302.8

Weight of empty bags	15.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0625 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	7.9	2.61	2.61	97.39
	3/8 inch	9.50	2.754	15.1	4.99	7.61	92.39
	No. 4	4.75	2.016	69.6	23.02	30.62	69.38
	No. 8	2.37	1.474	38.3	12.67	43.29	56.71
	No. 16	1.18	1.077	32.5	10.75	54.03	45.97
	No. 30	0.60	0.795	33.9	11.21	65.24	34.76
	No. 50	0.30	0.582	55.1	18.22	83.47	16.53
	No. 100	0.15	0.426	31.4	10.38	93.85	6.15
	No. 200	0.08	0.312	14.5	4.79	98.64	1.36
	Pan			4.1	1.36	100.00	0.00
			Total weight	302.4	100.00		

Operator	Joel Davenport	Weight of tear & soil	1202.2
Date	7/23/98	Weight of tear	899.7
Remarks		Weight of soil	302.5

## Sieve Analysis

Weight of bags & soil	620.2
Weight of soil	588.8

Weight of empty bags	31.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Cum. % retained	Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Percent retained		
Site 13 0626	3/4 inch	19.00	3.762	0.0	0.00	0.00	0.00	100.00
	1/2 inch	12.50	3.116	19.8	3.36	3.36	3.36	96.64
	3/8 inch	9.50	2.754	22.3	3.79	7.15	7.15	92.85
	No. 4	4.75	2.016	131.7	22.38	29.53	29.53	70.47
	No. 8	2.37	1.474	84.9	14.43	43.96	43.96	56.04
	No. 16	1.18	1.077	62.6	10.64	54.60	54.60	45.40
	No. 30	0.60	0.795	61.4	10.43	65.03	65.03	34.97
	No. 50	0.30	0.582	72.7	12.35	77.38	77.38	22.62
	No. 100	0.15	0.426	95.7	16.26	93.64	93.64	6.36
	No. 200	0.08	0.312	28.7	4.88	98.52	98.52	1.48
		Pan			8.7	1.48	100.00	100.00
				Total weight	588.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2387.9
Date	7/30/98	Weight of tear	1799.4
Remarks		Weight of soil	588.5

## Sieve Analysis

Weight of bags & soil	296.0
Weight of soil	280.2

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0626 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	7.1	2.54	2.54	97.46
	3/8 inch	9.50	2.754	15.7	5.61	8.14	91.86
	No. 4	4.75	2.016	57.4	20.50	28.64	71.36
	No. 8	2.37	1.474	43.8	15.64	44.29	55.71
	No. 16	1.18	1.077	30.6	10.93	55.21	44.79
	No. 30	0.60	0.795	28.7	10.25	65.46	34.54
	No. 50	0.30	0.582	30.7	10.96	76.43	23.57
	No. 100	0.15	0.426	50.1	17.89	94.32	5.68
	No. 200	0.08	0.312	12.1	4.32	98.64	1.36
		Pan			3.8	1.36	100.00
			Total weight	280.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	1179.8
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	280.1

## Sieve Analysis

Weight of bags & soil	324.2
Weight of soil	308.6

Weight of empty bags	15.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 13	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
0626	1/2 inch	12.50	3.116	12.7	4.12	4.12	95.88	
(light)	3/8 inch	9.50	2.754	6.6	2.14	6.26	93.74	
	No. 4	4.75	2.016	74.3	24.08	30.34	69.66	
	No. 8	2.37	1.474	41.1	13.32	43.66	56.34	
	No. 16	1.18	1.077	32.0	10.37	54.04	45.96	
	No. 30	0.60	0.795	32.7	10.60	64.64	35.36	
	No. 50	0.30	0.582	42.0	13.61	78.25	21.75	
	No. 100	0.15	0.426	45.6	14.78	93.03	6.97	
	No. 200	0.08	0.312	16.6	5.38	98.41	1.59	
	Pan			4.9	1.59	100.00	0.00	
			Total weight	308.5	100.00			

Operator	Joel Davenport	Weight of tear & soil	1208.1
Date	7/30/98	Weight of tear	899.7
Remarks		Weight of soil	308.4

## Sieve Analysis

Weight of bags & soil	784.4
Weight of soil	766.8

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0632	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	28.5	3.72	3.72	96.28
	3/8 inch	9.50	2.754	36.0	4.70	8.42	91.58
	No. 4	4.75	2.016	168.9	22.05	30.47	69.53
	No. 8	2.37	1.474	110.4	14.41	44.88	55.12
	No. 16	1.18	1.077	83.4	10.89	55.76	44.24
	No. 30	0.60	0.795	108.2	14.12	69.89	30.11
	No. 50	0.30	0.582	118.1	15.42	85.30	14.70
	No. 100	0.15	0.426	78.7	10.27	95.57	4.43
	No. 200	0.08	0.312	23.7	3.09	98.67	1.33
		Pan			10.2	1.33	100.00
			Total weight	766.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	1665.6
Date	8/4/98	Weight of tear	899.7
Remarks		Weight of soil	765.9



## Sieve Analysis

Weight of bags & soil	731.5
Weight of soil	716.1

Weight of empty bags	15.4
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Cum. % retained	Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Percent retained		
Site 13 0704	3/4 inch	19.00	3.762	0.0	0.00	0.00	0.00	100.00
	1/2 inch	12.50	3.116	69.9	9.77	9.77	9.77	90.23
	3/8 inch	9.50	2.754	63.3	8.85	18.63	18.63	81.37
	No. 4	4.75	2.016	148.8	20.81	39.44	39.44	60.56
	No. 8	2.37	1.474	84.4	11.80	51.24	51.24	48.76
	No. 16	1.18	1.077	69.0	9.65	60.89	60.89	39.11
	No. 30	0.60	0.795	70.1	9.80	70.69	70.69	29.31
	No. 50	0.30	0.582	109.8	15.35	86.04	86.04	13.96
	No. 100	0.15	0.426	61.2	8.56	94.60	94.60	5.40
	No. 200	0.08	0.312	23.0	3.22	97.82	97.82	2.18
		Pan			15.6	2.18	100.00	100.00
			Total weight	715.1	100.00			

Operator	Joel Davenport	Weight of tear & soil	1615.0
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	715.3

## Sieve Analysis

Weight of bags & soil	707.8
Weight of soil	692.0

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0705	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	57.0	8.24	8.24	91.76
	3/8 inch	9.50	2.754	62.2	8.99	17.23	82.77
	No. 4	4.75	2.016	145.5	21.03	38.26	61.74
	No. 8	2.37	1.474	88.0	12.72	50.98	49.02
	No. 16	1.18	1.077	60.3	8.72	59.69	40.31
	No. 30	0.60	0.795	66.5	9.61	69.30	30.70
	No. 50	0.30	0.582	125.4	18.12	87.43	12.57
	No. 100	0.15	0.426	53.5	7.73	95.16	4.84
	No. 200	0.08	0.312	20.0	2.89	98.05	1.95
		Pan			13.5	1.95	100.00
			Total weight	691.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	1191.7
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	292.0

# Sieve Analysis

Weight of bags & soil	655.7
Weight of soil	640.0

Weight of empty bags	15.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0707	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	24.3	3.80	3.80	96.20
	3/8 inch	9.50	2.754	35.7	5.58	9.38	90.62
	No. 4	4.75	2.016	116.4	18.20	27.58	72.42
	No. 8	2.37	1.474	80.9	12.65	40.22	59.78
	No. 16	1.18	1.077	74.5	11.65	51.87	48.13
	No. 30	0.60	0.795	76.5	11.96	63.83	36.17
	No. 50	0.30	0.582	138.3	21.62	85.45	14.55
	No. 100	0.15	0.426	61.0	9.54	94.98	5.02
	No. 200	0.08	0.312	24.1	3.77	98.75	1.25
		Pan			8.0	1.25	100.00
			Total weight	639.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	1539.4
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	639.7

## Sieve Analysis

Weight of bags & soil	614.0
Weight of soil	598.2

Weight of empty bags	15.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0710	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	27.4	4.58	4.58	95.42
	3/8 inch	9.50	2.754	28.6	4.79	9.37	90.63
	No. 4	4.75	2.016	148.7	24.88	34.25	65.75
	No. 8	2.37	1.474	76.6	12.82	47.06	52.94
	No. 16	1.18	1.077	57.7	9.65	56.72	43.28
	No. 30	0.60	0.795	61.6	10.31	67.02	32.98
	No. 50	0.30	0.582	113.9	19.06	86.08	13.92
	No. 100	0.15	0.426	54.5	9.12	95.20	4.80
	No. 200	0.08	0.312	20.8	3.48	98.68	1.32
		Pan			7.9	1.32	100.00
			Total weight	597.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	1497.5
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	597.8

## Sieve Analysis

Weight of bags & soil	693.0
Weight of soil	675.4

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0712	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	21.5	3.19	3.19	96.81
	3/8 inch	9.50	2.754	40.0	5.93	9.11	90.89
	No. 4	4.75	2.016	139.5	20.67	29.78	70.22
	No. 8	2.37	1.474	93.0	13.78	43.56	56.44
	No. 16	1.18	1.077	73.6	10.90	54.46	45.54
	No. 30	0.60	0.795	90.6	13.42	67.88	32.12
	No. 50	0.30	0.582	138.0	20.44	88.33	11.67
	No. 100	0.15	0.426	52.5	7.78	96.10	3.90
	No. 200	0.08	0.312	18.0	2.67	98.77	1.23
		Pan			8.3	1.23	100.00
			Total weight	675.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	1574.5
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	674.8

## Sieve Analysis

Weight of bags & soil	666.2
Weight of soil	648.5

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 0716	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	39.6	6.11	6.11	93.89
	3/8 inch	9.50	2.754	43.5	6.71	12.82	87.18
	No. 4	4.75	2.016	115.6	17.84	30.66	69.34
	No. 8	2.37	1.474	88.7	13.69	44.35	55.65
	No. 16	1.18	1.077	66.9	10.32	54.68	45.32
	No. 30	0.60	0.795	74.1	11.44	66.11	33.89
	No. 50	0.30	0.582	129.6	20.00	86.11	13.89
	No. 100	0.15	0.426	56.6	8.73	94.85	5.15
	No. 200	0.08	0.312	22.1	3.41	98.26	1.74
		Pan			11.3	1.74	100.00
			Total weight	648.0	100.00		

Operator	Joel Davenport	Weight of tear & soil	1547.8
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	648.1

## Sieve Analysis

Weight of bags & soil	817.3
Weight of soil	782.0

Weight of empty bags	35.3
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent retained	
Site 13 0720	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	36.1	4.62	4.62	95.38	
	3/8 inch	9.50	2.754	44.1	5.64	10.26	89.74	
	No. 4	4.75	2.016	134.0	17.14	27.41	72.59	
	No. 8	2.37	1.474	105.9	13.55	40.95	59.05	
	No. 16	1.18	1.077	89.7	11.48	52.43	47.57	
	No. 30	0.60	0.795	96.7	12.37	64.80	35.20	
	No. 50	0.30	0.582	150.2	19.22	84.02	15.98	
	No. 100	0.15	0.426	80.3	10.27	94.29	5.71	
	No. 200	0.08	0.312	32.4	4.15	98.44	1.56	
		Pan			12.2	1.56	100.00	0.00
			Total weight	781.6	100.00			

Operator	Joel Davenport	Weight of tear & soil	2580.8
Date	8/6/98	Weight of tear	1799.4
Remarks		Weight of soil	781.4

## Sieve Analysis

Weight of bags & soil	403.9
Weight of soil	386.2

Weight of empty bags	17.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0720 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	23.3	6.04	6.04	93.96
	3/8 inch	9.50	2.754	29.3	7.59	13.63	86.37
	No. 4	4.75	2.016	57.9	15.00	28.63	71.37
	No. 8	2.37	1.474	50.3	13.03	41.67	58.33
	No. 16	1.18	1.077	42.7	11.07	52.73	47.27
	No. 30	0.60	0.795	48.0	12.44	65.17	34.83
	No. 50	0.30	0.582	69.6	18.04	83.21	16.79
	No. 100	0.15	0.426	41.2	10.68	93.88	6.12
	No. 200	0.08	0.312	16.8	4.35	98.24	1.76
	Pan			6.8	1.76	100.00	0.00
			Total weight	385.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	1285.5
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	385.8



## Sieve Analysis

Weight of bags & soil	412.4
Weight of soil	359.8
Weight of empty bags	17.6

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained		
Site 13 0720 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	12.8	3.23	3.23	96.77	
	3/8 inch	9.50	2.754	14.8	3.74	6.97	93.03	
	No. 4	4.75	2.016	76.1	19.23	26.21	73.79	
	No. 8	2.37	1.474	55.6	14.05	40.26	59.74	
	No. 16	1.18	1.077	47.0	11.88	52.14	47.86	
	No. 30	0.60	0.795	48.7	12.31	64.44	35.56	
	No. 50	0.30	0.582	80.6	20.37	84.81	15.19	
	No. 100	0.15	0.426	39.1	9.88	94.69	5.31	
	No. 200	0.08	0.312	15.6	3.94	98.64	1.36	
		Pan			5.4	1.36	100.00	0.00
			Total weight	395.7	100.00			

Operator	Joel Davenport	Weight of tear & soil	1295.3
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	395.6

## Sieve Analysis

Weight of bags & soil	1517.1
Weight of soil	1499.6

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0929	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	96.4	6.43	6.43	93.57
	3/8 inch	9.50	2.754	80.4	5.36	11.80	88.20
	No. 4	4.75	2.016	306.1	20.42	32.22	67.78
	No. 8	2.37	1.474	236.2	15.76	47.98	52.02
	No. 16	1.18	1.077	225.6	15.05	63.03	36.97
	No. 30	0.60	0.795	249.3	16.63	79.66	20.34
	No. 50	0.30	0.582	191.7	12.79	92.45	7.55
	No. 100	0.15	0.426	74.2	4.95	97.40	2.60
	No. 200	0.08	0.312	26.7	1.78	99.19	0.81
		Pan			12.2	0.81	100.00
			Total weight	1498.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	2398.4
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	1498.7

## Sieve Analysis

Weight of bags & soil	1451.6
Weight of soil	1434.1

Weight of empty bags	17.5
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 0930	3/4 inch	19.00	3.762	8.4	0.59	0.59	99.41
	1/2 inch	12.50	3.116	57.9	4.04	4.62	95.38
	3/8 inch	9.50	2.754	61.1	4.26	8.89	91.11
	No. 4	4.75	2.016	301.1	21.00	29.89	70.11
	No. 8	2.37	1.474	203.4	14.19	44.08	55.92
	No. 16	1.18	1.077	160.6	11.20	55.28	44.72
	No. 30	0.60	0.795	163.0	11.37	66.65	33.35
	No. 50	0.30	0.582	235.5	16.43	83.08	16.92
	No. 100	0.15	0.426	155.1	10.82	93.90	6.10
	No. 200	0.08	0.312	50.0	3.49	97.38	2.62
		Pan			37.5	2.62	100.00
			Total weight	1433.6	100.00		

Operator	Joel Davenport	Weight of tear & soil	2333.3
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	1433.6

## Sieve Analysis

Weight of bags & soil	1291.6
Weight of soil	1275.9

Weight of empty bags	15.7
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 0931	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	75.0	5.88	5.88	94.12	
	3/8 inch	9.50	2.754	87.4	6.85	12.73	87.27	
	No. 4	4.75	2.016	265.1	20.79	33.52	66.48	
	No. 8	2.37	1.474	174.3	13.67	47.19	52.81	
	No. 16	1.18	1.077	148.6	11.65	58.84	41.16	
	No. 30	0.60	0.795	195.6	15.34	74.18	25.82	
	No. 50	0.30	0.582	203.5	15.96	90.14	9.86	
	No. 100	0.15	0.426	81.6	6.40	96.53	3.47	
	No. 200	0.08	0.312	26.5	2.08	98.61	1.39	
		Pan			17.7	1.39	100.00	0.00
				Total weight	1275.3	100.00		

Operator	Joel Davenport	Weight of tear & soil	2175.1
Date	8/6/98	Weight of tear	899.7
Remarks		Weight of soil	1275.4

## Sieve Analysis

Weight of bags & soil	1362.2
Weight of soil	1333.4

Weight of empty bags	31.8
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
1021	1/2 inch	12.50	3.116	56.8	4.26	4.26	95.74
	3/8 inch	9.50	2.754	61.0	4.58	8.84	91.16
	No. 4	4.75	2.016	268.1	20.12	28.95	71.05
	No. 8	2.37	1.474	194.1	14.56	43.52	56.48
	No. 16	1.18	1.077	152.2	11.42	54.94	45.06
	No. 30	0.60	0.795	180.0	13.51	68.44	31.56
	No. 50	0.30	0.582	252.9	18.98	87.42	12.58
	No. 100	0.15	0.426	110.4	8.28	95.70	4.30
	No. 200	0.08	0.312	40.5	3.04	98.74	1.26
	Pan			16.8	1.26	100.00	0.00
			Total weight	1332.8	100.00		

Operator	Joel Davenport	Weight of tear & soil	3132.1
Date	8/10/98	Weight of tear	1799.4
Remarks		Weight of soil	1332.7

## Sieve Analysis

Weight of bags & soil	657.1
Weight of soil	641.3
Weight of empty bags	
15.8	

Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 1021 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	22.9	3.57	3.57	96.43	
	3/8 inch	9.50	2.754	27.7	4.32	7.89	92.11	
	No. 4	4.75	2.016	136.2	21.24	29.14	70.86	
	No. 8	2.37	1.474	92.7	14.46	43.60	56.40	
	No. 16	1.18	1.077	71.7	11.18	54.78	45.22	
	No. 30	0.60	0.795	79.2	12.35	67.13	32.87	
	No. 50	0.30	0.582	123.2	19.22	86.35	13.65	
	No. 100	0.15	0.426	57.2	8.92	95.27	4.73	
	No. 200	0.08	0.312	19.9	3.10	98.38	1.62	
		Pan			10.4	1.62	100.00	0.00
			Total weight	641.1	100.00			

Operator	Joel Davenport	Weight of tear & soil	1540.8
Date	8/10/98	Weight of tear	899.7
Remarks		Weight of soil	641.1

## Sieve Analysis

Weight of bags & soil	708.1
Weight of soil	692.1

Weight of empty bags	16.0
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Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 1021 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	33.9	4.90	4.90	95.10
	3/8 inch	9.50	2.754	33.3	4.81	9.72	90.28
	No. 4	4.75	2.016	131.9	19.07	28.78	71.22
	No. 8	2.37	1.474	101.4	14.66	43.44	56.56
	No. 16	1.18	1.077	80.5	11.64	55.08	44.92
	No. 30	0.60	0.795	100.8	14.57	69.65	30.35
	No. 50	0.30	0.582	129.7	18.75	88.41	11.59
	No. 100	0.15	0.426	53.2	7.69	96.10	3.90
	No. 200	0.08	0.312	20.6	2.98	99.07	0.93
		Pan			6.4	0.93	100.00
			Total weight	691.7	100.00		

Operator	Joel Davenport	Weight of tear & soil	1591.3
Date	8/10/98	Weight of tear	899.7
Remarks		Weight of soil	691.6

## Sieve Analysis

Weight of bags & soil	1466.0
Weight of soil	1448.4

Weight of empty bags	17.6
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Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 1022	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	52.3	3.61	3.61	96.39
	3/8 inch	9.50	2.754	76.1	5.26	8.87	91.13
	No. 4	4.75	2.016	314.7	21.74	30.61	69.39
	No. 8	2.37	1.474	202.3	13.98	44.59	55.41
	No. 16	1.18	1.077	187.3	12.94	57.53	42.47
	No. 30	0.60	0.795	244.3	16.88	74.40	25.60
	No. 50	0.30	0.582	207.1	14.31	88.71	11.29
	No. 100	0.15	0.426	110.1	7.61	96.32	3.68
	No. 200	0.08	0.312	38.1	2.63	98.95	1.05
		Pan			15.2	1.05	100.00
			Total weight	1447.5	100.00		

Operator	Joel Davenport	Weight of tear & soil	2398.4
Date	8/10/98	Weight of tear	899.7
Remarks		Weight of soil	1498.7



## Sieve Analysis

Weight of bags & soil	1347.1
Weight of soil	1315.8

Weight of empty bags	31.3
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Sample number	Sieve size	Sieve opening		Field data - total weight =				Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing	
Site 13 1023	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00	
	1/2 inch	12.50	3.116	53.7	4.08	4.08	95.92	
	3/8 inch	9.50	2.754	67.8	5.16	9.24	90.76	
	No. 4	4.75	2.016	284.6	21.64	30.88	69.12	
	No. 8	2.37	1.474	181.5	13.80	44.68	55.32	
	No. 16	1.18	1.077	138.1	10.50	55.19	44.81	
	No. 30	0.60	0.795	140.9	10.71	65.90	34.10	
	No. 50	0.30	0.582	236.2	17.96	83.86	16.14	
	No. 100	0.15	0.426	136.5	10.38	94.24	5.76	
	No. 200	0.08	0.312	44.5	3.38	97.63	2.37	
		Pan			31.2	2.37	100.00	0.00
			Total weight	1315.0	100.00			

Operator	Joel Davenport	Weight of tear & soil	3114.4
Date	8/10/98	Weight of tear	1799.4
Remarks		Weight of soil	1315.0

## Sieve Analysis

Weight of bags & soil	659.7
Weight of soil	644.3

Weight of empty bags	15.4
----------------------	------

Sample number	Sieve size	Sieve opening		Field data - total weight =			
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	Percent passing
Site 13 1023 (heavy)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	31.3	4.86	4.86	95.14
	3/8 inch	9.50	2.754	27.1	4.21	9.07	90.93
	No. 4	4.75	2.016	141.0	21.90	30.97	69.03
	No. 8	2.37	1.474	90.6	14.07	45.04	54.96
	No. 16	1.18	1.077	66.1	10.27	55.30	44.70
	No. 30	0.60	0.795	69.3	10.76	66.07	33.93
	No. 50	0.30	0.582	120.6	18.73	84.80	15.20
	No. 100	0.15	0.426	63.8	9.91	94.70	5.30
	No. 200	0.08	0.312	20.4	3.17	97.87	2.13
		Pan			13.7	2.13	100.00
			Total weight	643.9	100.00		

Operator	Joel Davenport	Weight of tear & soil	1543.5
Date	8/10/98	Weight of tear	899.7
Remarks		Weight of soil	643.8

## Sieve Analysis

Weight of bags & soil	687.4
Weight of soil	671.5

Weight of empty bags	15.9
----------------------	------

Sample number	Sieve size	Sieve opening		Field data - total weight =			Percent passing
		(mm)	.45 power	Weight retained	Percent retained	Cum. % retained	
Site 13 1023 (light)	3/4 inch	19.00	3.762	0.0	0.00	0.00	100.00
	1/2 inch	12.50	3.116	22.4	3.34	3.34	96.66
	3/8 inch	9.50	2.754	40.7	6.06	9.40	90.60
	No. 4	4.75	2.016	143.6	21.40	30.80	69.20
	No. 8	2.37	1.474	90.9	13.54	44.35	55.65
	No. 16	1.18	1.077	72.0	10.73	55.07	44.93
	No. 30	0.60	0.795	71.6	10.67	65.74	34.26
	No. 50	0.30	0.582	115.6	17.23	82.97	17.03
	No. 100	0.15	0.426	72.7	10.83	93.80	6.20
	No. 200	0.08	0.312	24.1	3.59	97.39	2.61
		Pan			17.5	2.61	100.00
			Total weight	671.1	100.00		

Operator	Joel Davenport	Weight of tear & soil	1570.9
Date	8/10/98	Weight of tear	899.7
Remarks		Weight of soil	671.2

# Site 14

# North of Allegan Rd. Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M50 Direction: SB  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 14 ADT: \_\_\_\_\_

**Definition of Segregation:**

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

**Type of Segregation:**

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

**Degree of Segregation**

Heavy: stone against stone, little or no matrix (fine)  
Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat  
Light: matrix (fine) in place, more stone than surrounding mat

**Distress to be Identified**

**1. Raveling**

Low       Moderate       High  
Low: aggregate or binder has started to wear away, but not progressed significantly  
Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate  
High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

**2. Cracking**

Low       Moderate       High  
Low: a crack with a mean width  $\leq 0.25$  in.  
Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking  
High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

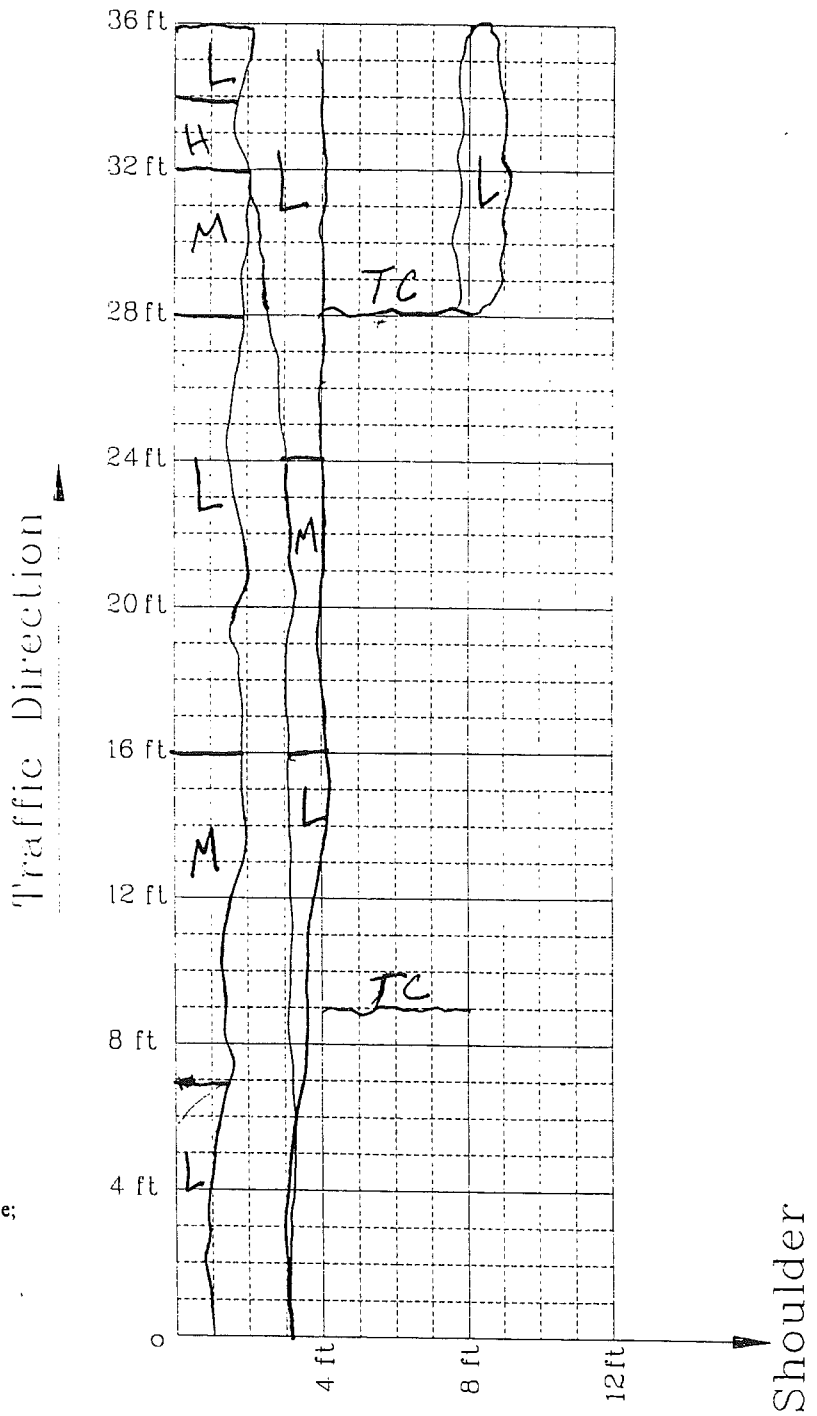
**3. Rut Depth**

**4. Flushing**

Low       Moderate       High  
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt  
Moderate: an area of pavement surface that is losing surface texture due to excess asphalt  
High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

**COMMENTS**

**Segregation Map**



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather: Eastbound

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: \_\_\_\_\_ Route: M50

Direction: South

Region: \_\_\_\_\_ Mile Post: from North of Allegan to Rd

Section Number: \_\_\_\_\_ Test Site Number: 14 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

<u>Continuous</u>			
<u>Systematic</u>			
<u>Random</u>			

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low       Moderate       High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low       Moderate       High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

High: any crack with a mean width  $\geq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent moderate to high random cracking

### 3. Rut Depth

### 4. Flushing

Low       Moderate       High

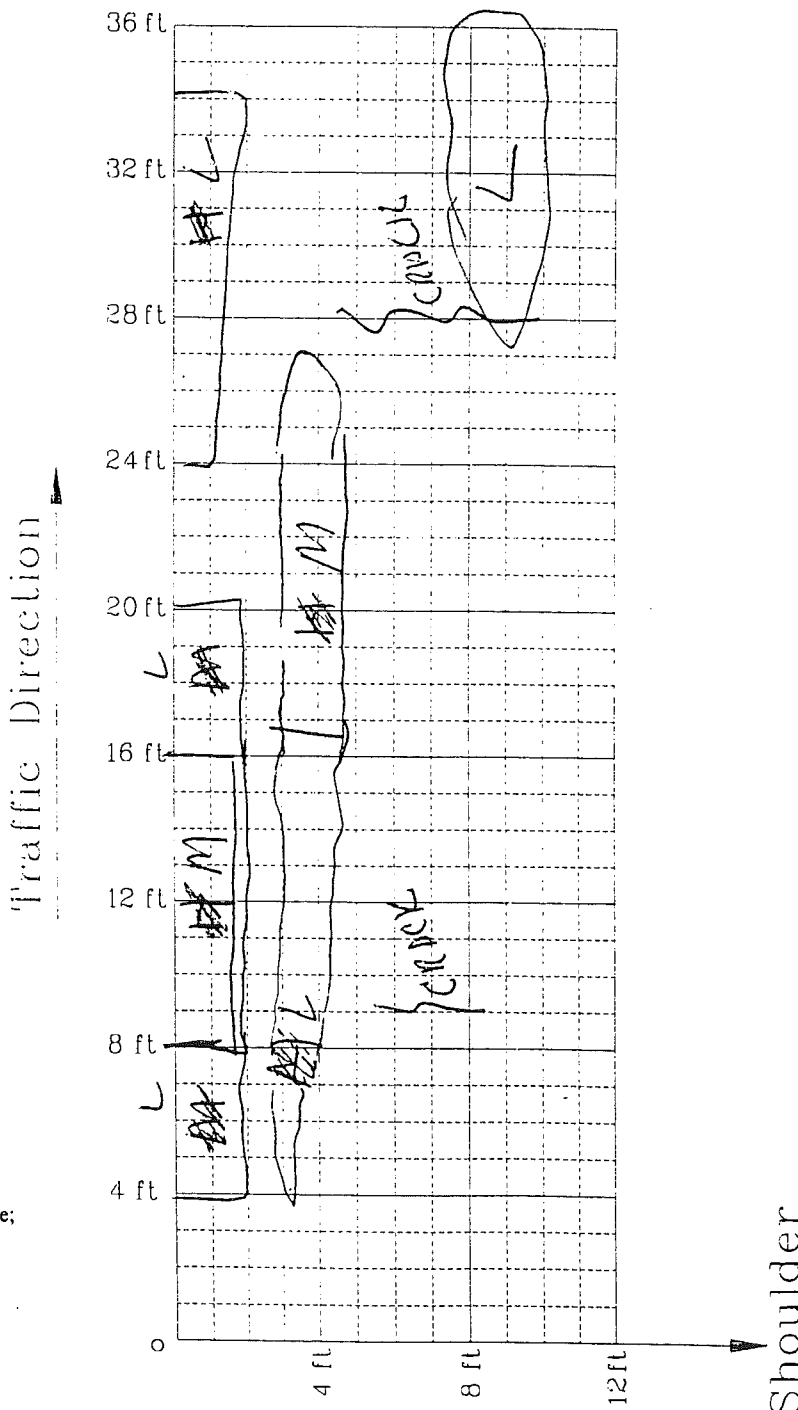
Low: an area of pavement surface discolored relative to the remainder of the pavement by excess asphalt

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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

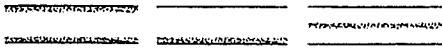
Surveyor: \_\_\_\_\_ (your name) *EAST Ad*  
 Control Section Number: *1* Route: *M-50* Direction: \_\_\_\_\_  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: *14* ADT: \_\_\_\_\_

## Definition of Segregation:

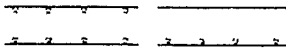
Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

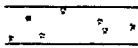
Continuous



Systematic



Random



## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

Light: matrix (fine) in place, more stone than surrounding mat

## Distress to be Identified

### 1. Raveling

Low  Moderate  High

Low: aggregate or binder has started to wear away, but not progressed significantly

Moderate: aggregate or binder has worn away, and the surface texture becomes moderately rough and pitted; loss particles generally exist; loss of fine aggregate and some loss of coarse aggregate

High: aggregate or binder has worn away, and the surface texture is very rough and pitted; loss of coarse aggregate

### 2. Cracking

Low  Moderate  High

Low: a crack with a mean width  $\leq 0.25$  in.

Moderate: a crack with a mean width  $> 0.25$  in. and  $\leq 0.75$  in.; or any crack with a mean width  $\leq 0.75$  in. and adjacent low severity random cracking

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### 3. Rut Depth

### 4. Flushing

Low  Moderate  High

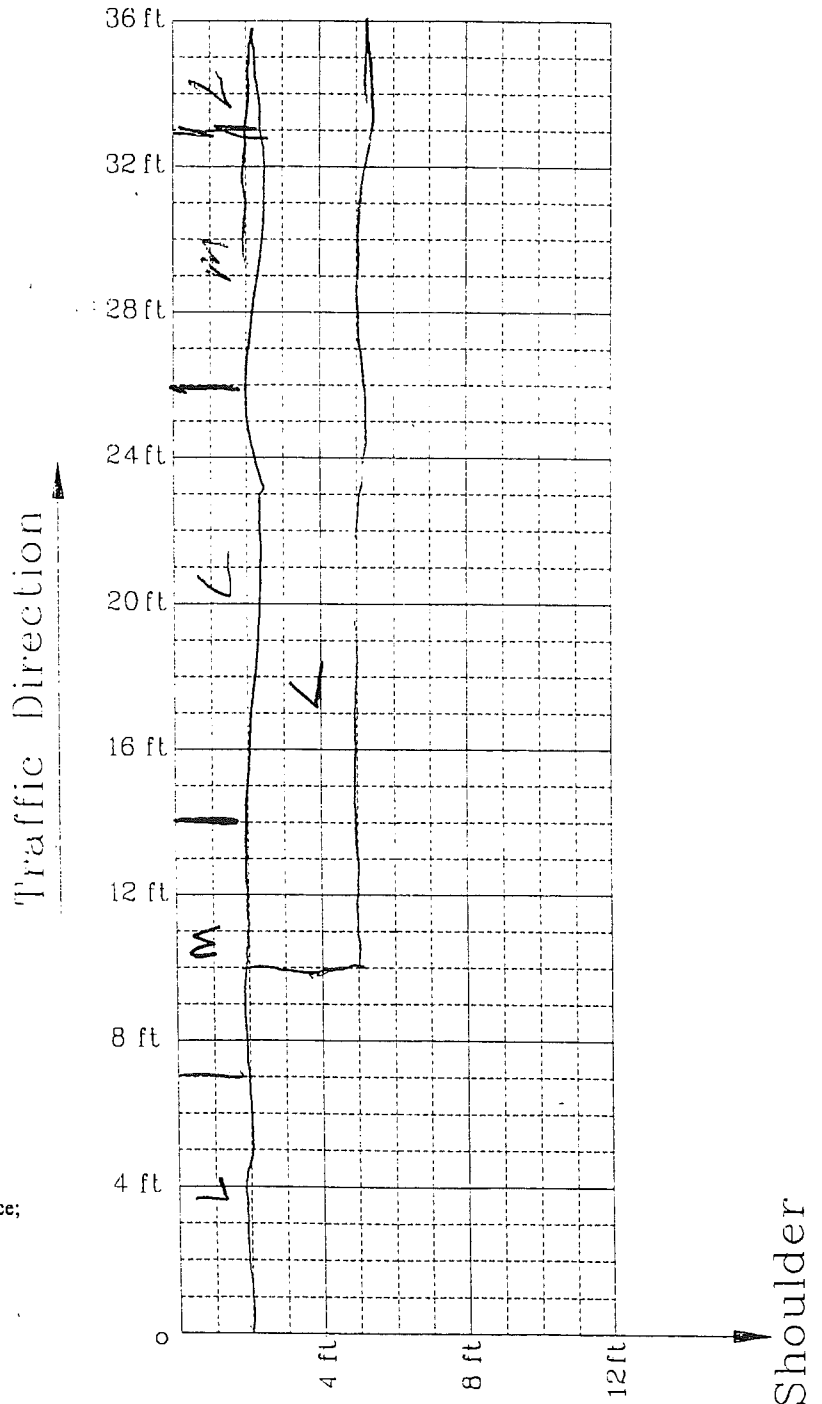
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High: excess asphalt gives the pavement surface a shiny appearance; the aggregate may be obscured by excess asphalt; tire marks may be evident in warm weather

## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

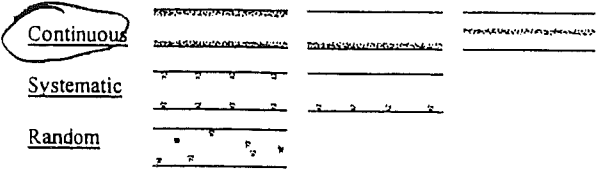
Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: M-50 Direction: S Bd  
 Region: University Eaton Creek Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 14 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:



### Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)  
**Medium:** lack of surrounding matrix (fine), significantly more stone than surrounding mat  
**Light:** matrix (fine) in place, more stone than surrounding mat

### Distress to be Identified

#### 1. Raveling

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#### 2. Cracking

Low  Moderate  High

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#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

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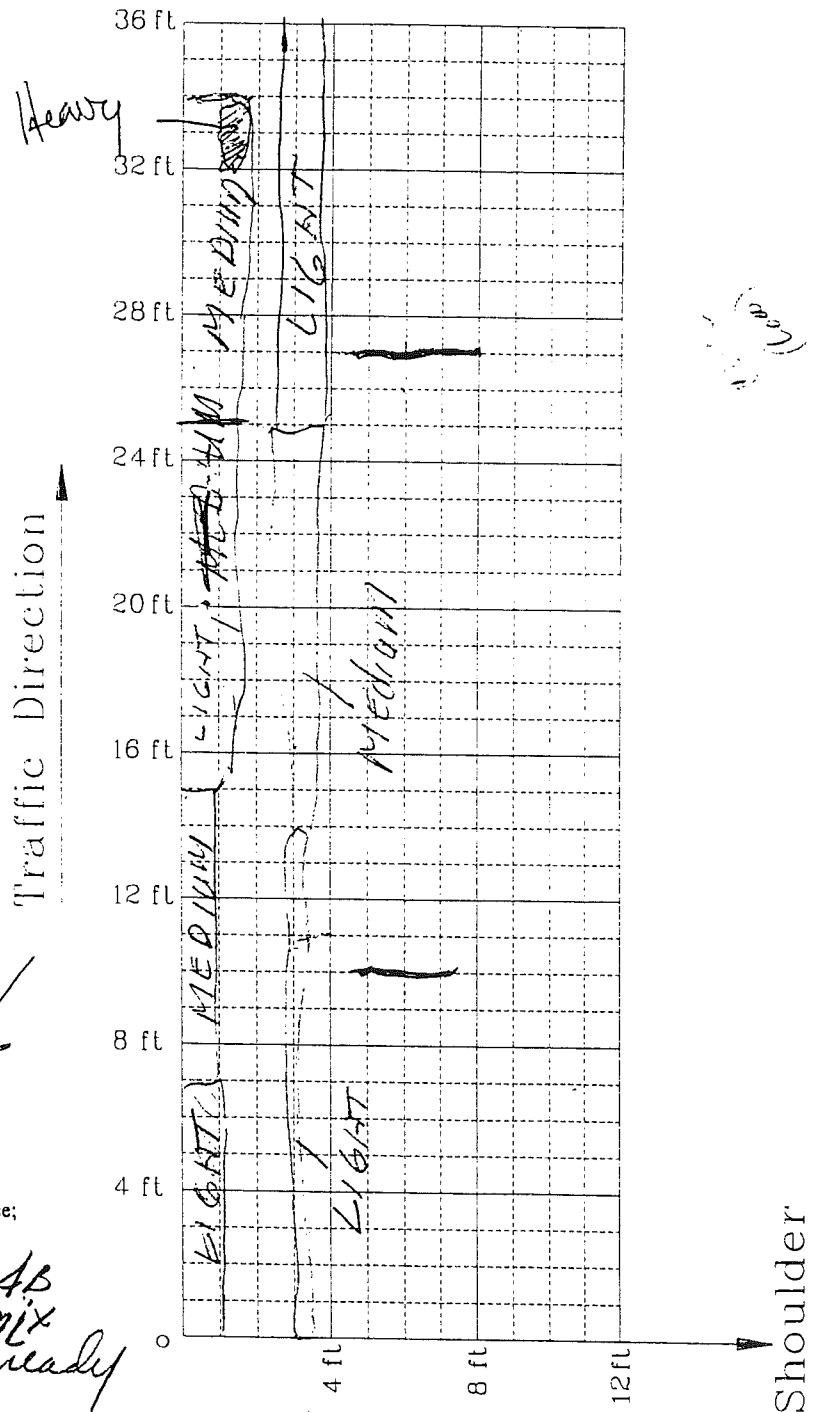
**Moderate:** an area of pavement surface that is losing surface texture due to excess asphalt

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### COMMENTS

*1 course overlay - 4.5 mix  
 Reflective cracks in mat already  
 3' shoulder -*

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level



# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ K (your name)

Control Section Number: \_\_\_\_\_ Route: \_\_\_\_\_ Direction: \_\_\_\_\_

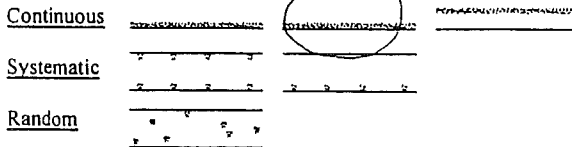
Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: 14 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:



## Degree of Segregation

**Heavy:** stone against stone, little or no matrix (fine)

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## Distress to be Identified

### 1. Raveling

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### 3. Rut Depth

### 4. Flushing

Low       Moderate       High

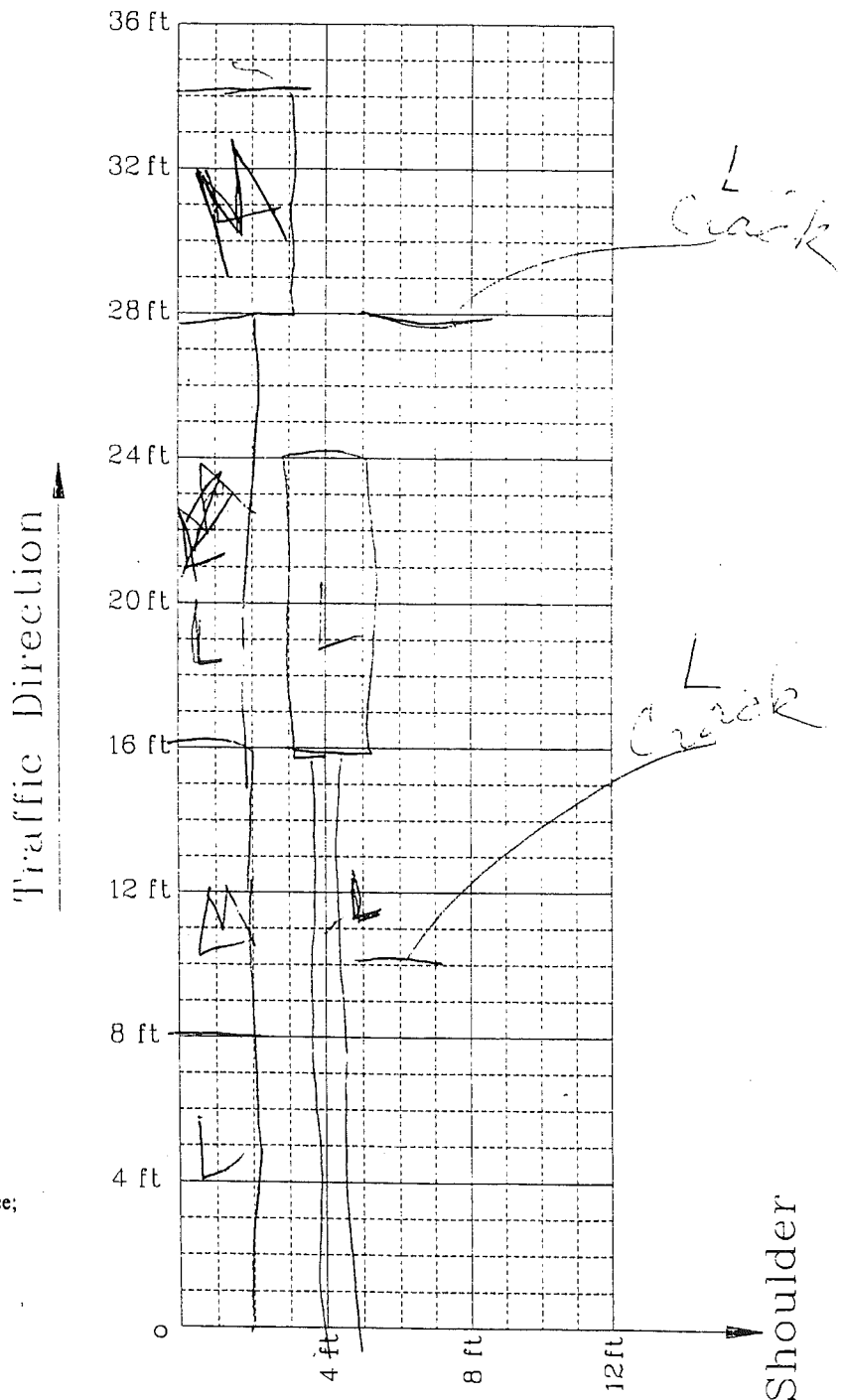
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## COMMENTS

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather: OVERCAST Light snow

Surveyor: \_\_\_\_\_ (your name)

Control Section Number: 23 Route: M-50 Direction: EB N of Allegan

Region: University Mile Post: from \_\_\_\_\_ to \_\_\_\_\_

Section Number: \_\_\_\_\_ Test Site Number: #14 ADT: \_\_\_\_\_

## Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

## Type of Segregation:

? Continuous \_\_\_\_\_

Systematic \_\_\_\_\_

Random \_\_\_\_\_

## Degree of Segregation

Heavy: stone against stone, little or no matrix (fine)

Medium: lack of surrounding matrix (fine), significantly more stone than surrounding mat

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## Distress to be Identified

### 1. Raveling

Low  Moderate  High

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### 4. Flushing

Low  Moderate  High

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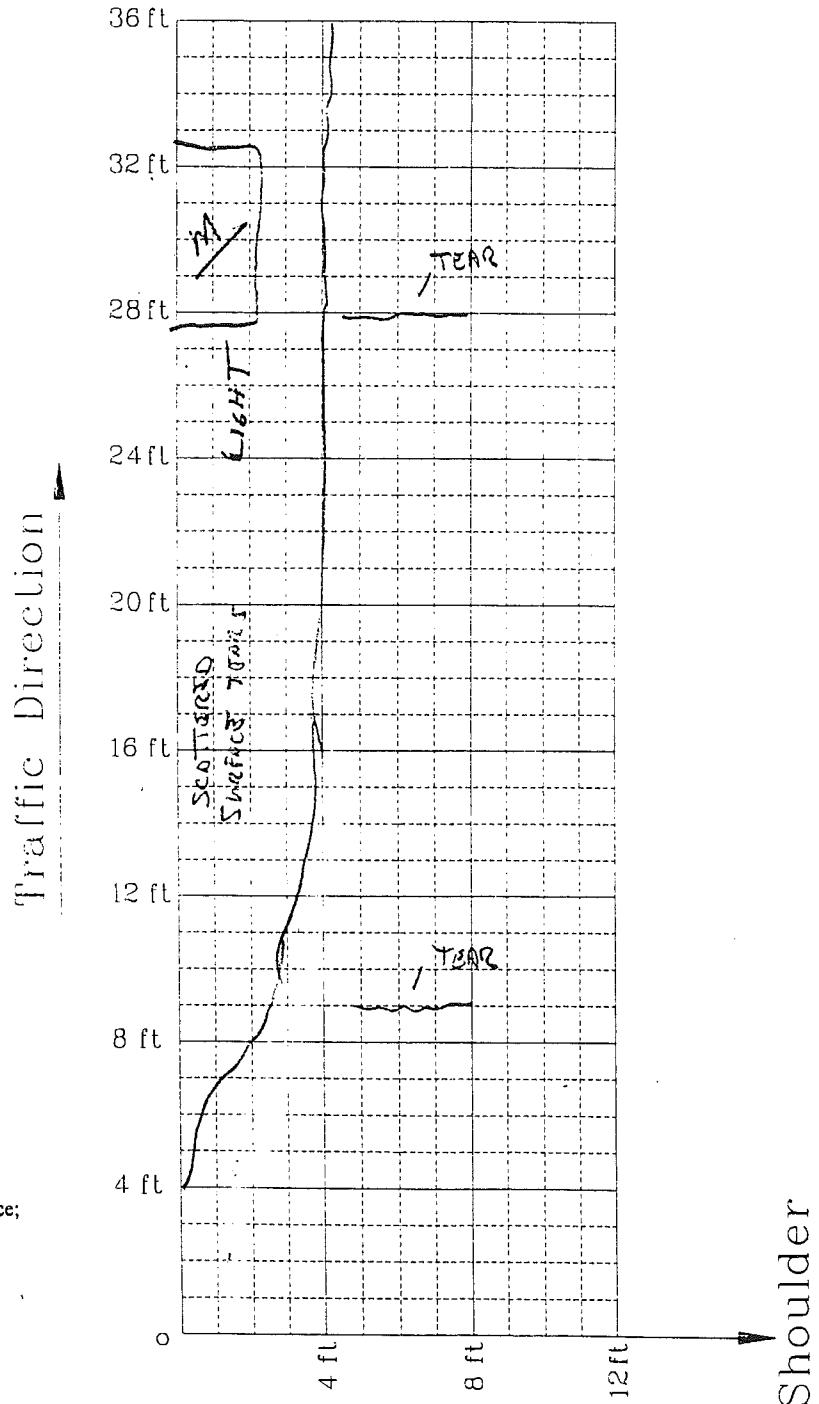
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## COMMENTS

LOOKS WORS THAN IT IS UNDER  
CLOSE INSPECTION

## Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

37

# Segregation Survey

Date of Survey: Dec. 9, 1997

Weather:

Surveyor: \_\_\_\_\_ (your name)  
 Control Section Number: \_\_\_\_\_ Route: MI-50 Direction: South bound  
 Region: \_\_\_\_\_ Mile Post: from \_\_\_\_\_ to \_\_\_\_\_  
 Section Number: \_\_\_\_\_ Test Site Number: 14 ADT: \_\_\_\_\_

### Definition of Segregation:

Areas of non-uniform distribution of coarse and fine aggregate particles in a bituminous pavement that are visually identifiable or can be determined by other methods.

### Type of Segregation:

Continuous \_\_\_\_\_  
Systematic \_\_\_\_\_  
Random \_\_\_\_\_

### Degree of Segregation

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#### 3. Rut Depth

#### 4. Flushing

Low  Moderate  High

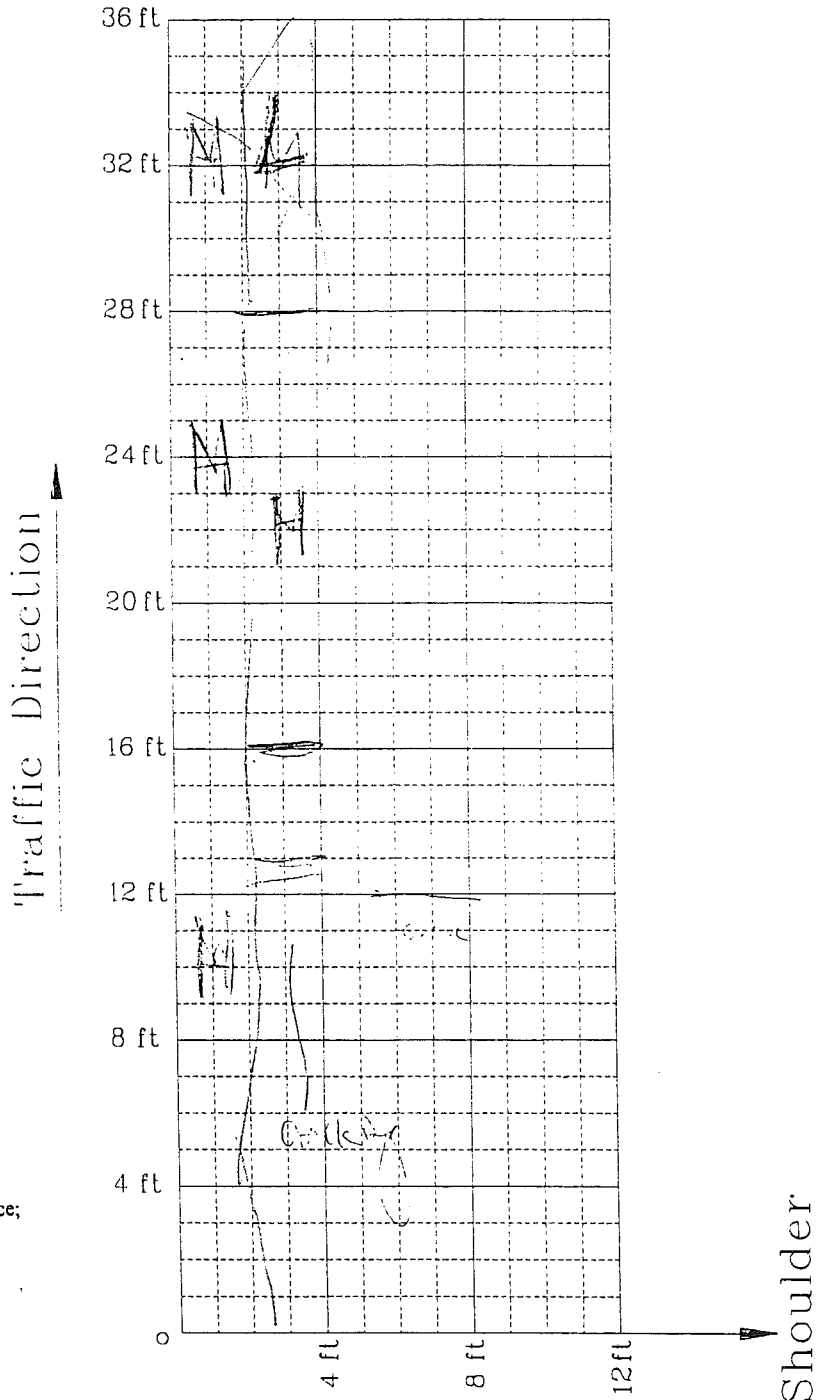
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### COMMENTS

### Segregation Map



Please mark down the location of segregation, degree of segregation, also describe the segregation pattern; if distresses (raveling, cracking, and rutting) are identified, please provide information for the location and the severity level

## Nuclear Density Sampling Data (Feb. 13, 1998)

**SITE 14**

**M-50 S. Bound (1437' north of Allegan road)  
Eaton County**

Chart Standard		Density	2617
		Moisture	705
Operating Standard		Density	2608
		Moisture	708
<b>Sample 1</b>		<b>Sample 2</b>	
<b>Medium</b>		<b>Light</b>	
<b>0133</b>	139.5	<b>0333</b>	144.9
<b>0132</b>	137.5	<b>0332</b>	143.8
<b>0131</b>	140.1	<b>0331</b>	142.7
<b>0130</b>	140.3	<b>0330</b>	143.6
<b>0129</b>	138.6	<b>0329</b>	143.7
<b>0128</b>	139.1	<b>0328</b>	144.0
<b>mean</b>	139.2	<b>mean</b>	143.8
<b>std</b>	1.04	<b>std</b>	0.71

Gauge No.	102420
Model	Troxler 3440
Inspector	Joe Badgley

<b>Sample 3</b>		<b>Sample 4</b>	
<b>M-L</b>		<b>Control</b>	
<b>0423</b>	139.7	<b>0921</b>	147.7
<b>0422</b>	141.9	<b>0920</b>	147.1
<b>0421</b>	140.0	<b>0919</b>	146.7
<b>0420</b>	135.9	<b>0918</b>	147.6
<b>0419</b>	139.9	<b>0917</b>	147.0
<b>0418</b>	138.6	<b>0916</b>	146.3
<b>mean</b>	139.3	<b>mean</b>	147.1
<b>std</b>	1.99	<b>std</b>	0.53

<b>Sample 5</b>		<b>Sample 6</b>		<b>Sample 7</b>	
<b>Medium</b>		<b>Light</b>		<b>Control</b>	
<b>0113</b>	139.2	<b>0313</b>	140.9	<b>0807</b>	145.1
<b>0112</b>	137.7	<b>0312</b>	142.3	<b>0806</b>	144.4
<b>0111</b>	137.7	<b>0311</b>	140.9	<b>0805</b>	144.8
<b>0110</b>	138.4	<b>0310</b>	142.0	<b>0804</b>	145.3
<b>0109</b>	137.5	<b>0309</b>	142.3	<b>0803</b>	144.4
<b>0108</b>	137.5	<b>0308</b>	142.9	<b>0802</b>	143.5
<b>mean</b>	138.0	<b>mean</b>	141.9	<b>mean</b>	144.6
<b>std</b>	0.68	<b>std</b>	0.82	<b>std</b>	0.64

